SPIRITUAL LAW

IN THE

NATURAL WORLD

A. S. Mizener

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A wonderful
concept of
the
GOD
of
the universe!

His wonders,
His ways,
His GREATNESS and
GLORY!!
manifest in everything
everywhere

SPIRITUAL LAW

IN

THE NATURAL WORLD:

AN ATTEMPT
TO DEVELOP, ACCORDING TO SCRIPTURE-TRUTH,

THE INTERPRETATION OF NATURE.

BY F. W. GRANT.

"But ask, now, the beasts, and they shall teach thee; and the fowls of the air, and they shall tell thee; or speak to the earth, and it shall teach thee; and the fishes of the sea shall declare unto thee." (Job xii. 7, 8.)

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PREFACE.

THE title of this book will assure the reader that its *subject*, at least, is one of great importance. It is, however brief, a connected argument in behalf of the positions, first, that Nature is, in its every detail, a witness for God; secondly, that its teaching is symbolic, as largely the Old Testament also, the first written revelation, is known to be; thirdly, that it needs, therefore, an interpreter, as it is contrary to all rules of hermeneutics that parables should define *doctrine;* fourthly, that Scripture must therefore be the interpreter of Nature, and not the reverse; fifthly, that if Nature be indeed a witness to God and yet its witness be of this character, the thought that Scripture is not intended to teach science must be very guardedly applied.

After this, the way being opened for an unprejudiced appeal to it, it is sought to show that there is in Nature, as in Scripture, a numerical system, which, as interpreted by Scripture, speaks with no uncertain sound of its true meaning,—mapping out its divisions, defining the relation of one to another and to the whole, while demonstrating that spiritual law reigns everywhere in the natural world, and that Nature not only witnesses to *God*, but definitely to the God and Father of our Lord Jesus Christ, and to the truth of Scripture.

As to the result, it is only so startling as on that very account to produce a feeling of incredulity in most minds. It is as if one should claim to have discovered a manuscript of Aristotle, and should produce something written in good modern English. Having myself felt the full force of this, I can sympathize with those who feel it. The cases are of course in no wise parallel, and the remedy will be found in a more thorough scrutiny of the basis of the argument. Being founded on a simple comparison of only the most familiar facts in nature with that which can be fully tested by Scripture, and where every fresh application of the one to the other is a new verification, the proof submits itself to the judgment of every ordinary mind.

May He whose law nature's law is be with all that is of Himself—which is all that is of any value—in what is now sent forth!

F. W. GRANT.

Plainfield, N. J.
March 19th, 1891.

SPIRITUAL LAW IN THE NATURAL WORLD:

AN ATTEMPT TO DEVELOP, ACCORDING TO SCRIPTURE-TRUTH,

THE INTERPRETATION OF NATURE.

INTRODUCTION.

THE title of the book which is before the reader will prepare him to find in it a certain sympathy with a recent one, widely known, yet at the same time with a difference of method which probably will account for a very different result. And yet Prof. Drummond has actually in his introduction anticipated that definition of the truth as to the "Natural" to which by the adoption of it I have committed myself here. "After all," he says, "the true greatness of Law lies in its vision of the Unseen. Law in the visible is the Invisible in the visible. And to speak of Laws as natural is to define them in their application to a part of the universe, the sense-part, whereas a wider survey would lead us to regard all Law as essentially spiritual. To magnify the laws of nature, as laws of this small world of ours, is to take a provincial view of the universe. Law is great, not because the phenomenal world is great, but because these vanishing lines are the avenues into the eternal Order."

And he adds further on,—

"How the priority of the Spiritual improves the strength and meaning of the whole argument will be seen at once. The lines of the Spiritual existed first, and it was natural to expect that when 'the Intelligence resident in the Unseen' proceeded to frame the material universe, He should go upon the lines already laid down. He would, in short, simply project the higher laws downward, so that the natural world would become an incarnation, a visible representation, a working model of the spiritual. The whole (?) function of the material world lies here."

Now this is in the main so true and good, that one might wonder that the author should after all prefer for his book the title of "*Natural* Law in the *Spiritual* World" rather than the converse. The fact is evidently that he takes the two propositions as identical; and why not, if natural law is but spiritual law projected downward into nature? This really *spiritual* law must then, of course, exist in the spiritual world! Yet it is no wonder if he is a little puzzled about the limits and spirituality of the law of *gravitation!* Without insisting too much on this, it is evident that the title he has chosen implies a method, no less than that of following the "vanishing lines" of the seen into the unseen. An ambitious attempt certainly! My own is humbler; and for me at least I feel safer. His method is to take nature to interpret Scripture; and I fear we must even say, to supplement it. On my part, with no

courage but such as the child's gained from the grasp of his father's hand, I can only seek in the light of *Scripture* to interpret *nature.*

Lest I should be thought to misconceive Prof. Drummond here,—a thing very possible to any, and of which I would desire to remember the possibility,—I shall let him speak for himself, and as his book is in so many hands, it will be abundantly easy to verify the quotations. At the very outset indeed he tells us in his preface expressly, that when with him "the subject-matter Religion had taken on the method of the expression of Science, and I discovered myself," he says, "enunciating Spiritual Law in the exact terms of Biology and Physics," that "this was not simply a scientific coloring given to Religion, the mere freshening of the theological air with natural facts and illustrations. It was an entire *re-casting of truth.* My spiritual world before was a chaos of facts. . . . It was the one region still unpossessed by law. I saw then why men of science distrust theology; why those who learn to look upon law as authority grow cold to it —it was the great Exception."

It is true that he has said just before this, "I make no charge against theology in general. I speak of my own." But he must have forgotten this before completing the paragraph: for surely it was not *his* theology only that he says the men of

science distrusted, nor indeed any particular theology, but theology as a whole. And this distrust, he tells us, is chargeable, not to any thing in the men of science, but distinctly to theology itself.

While his spiritual world was thus a chaos, nature alone appeared to him firm :—

"And the reason is palpable. No man can study modern science without a change coming over his view of truth. What impresses him about nature is its solidity. He is there standing upon actual things, among fixed laws." "There is a sense of solidity about a law of nature, which belongs to nothing else in the world. Here at last, amid all that is shifting, is one thing sure, . . . one thing that holds its way to me eternally, uncorrupted and undefiled." "In these laws one stands face to face with truth, solid and unchangeable."

This is plain speaking ; and surely in the presence of authority such as this, it becomes theology to offer her neck meekly to the yoke, and accept her master : every natural law is that ! But when she asks humbly to be shown these laws, it is somewhat disappointing to be told,—

"The laws of nature are simply the orderly condition of things in nature, *what is found in nature by a sufficient number of competent observers.* What these laws are in themselves is not agreed. That they have any absolute existence even is far from certain" !!

One would have thought that here there might be some hope of escape for theology after all, if the

last be true; but the first sentence was evidently intended to cut off the hope. A "sufficient" number of "competent" observers have, we suppose, undertaken the government for the unseen authorities and are themselves, no doubt, authority enough. What observers are "competent," and how many of these are "sufficient," would, after all, perhaps, be relevant questions still; but they are unanswered. Probably this reserve is to increase our respect for the authorities, a thing which proverbially, familiarity does not always do.

This government, strange to say, is a very modern one. Nature's voice, it seems, has hitherto been "muffled."

"But now that science has made the world around articulate, it speaks to religion with a twofold purpose. In the first place, it offers to corroborate theology; in the second, *to purify it.*"

The last should be first evidently: it must purify it first, or else in the nature of things it cannot corroborate it. It is only the revised religion that it can confirm; and to submit to be revised is the first necessity for confirmation. Yea,—

"and while there are some departments of theology where its jurisdiction cannot be sought, there are others in which nature may have to *define the contents* as well as the limits of belief."

Practically, the obedient subjects of such authority

"must oppose with every energy they possess what *seems* to them to oppose the eternal course of things."

Doubtless, so taught, they will throw sufficient energy into the opposition. And no wonder if by this process there should be in result "an entire recasting of truth." "The old ground of faith, authority," he says, "is given up." Yet what else is the testimony of a "sufficient number of competent observers"? Is it impossible that Scripture, with its innumerable lines of proof—"many infallible proofs" (Acts i. 3,)—should be equally trustworthy?

Note that through all these quotations Scripture is not suffered to appear. We hear of Theology and Religion, the last a term vague enough to be applied to the worship of a fetish or a crocodile, the former an extract of some kind from Scripture, or presumed to be so, but in the form given it by human minds. As such this is necessarily fallible, —*as* fallible as "a sufficient number of competent (natural) observers,"—and being fallible, can be opposed to the solidity of laws of nature, without its being clear that in fact what represents these laws of nature is an "-ology" as much as the other,—an extract distilled through human minds. How enormous is the blunder here! Let a man say, if he will, that *Scripture* is fallible, but man's science not, we know what that means: it is honest and straightforward. If it be really only theology that is in

question, it is simple enough that *theology* may be as much at war with nature, as science so-called with Scripture. There is nothing very brilliant or calculated to provoke comment in so trite an observation.

Eloquent as the Edinburgh professor is, and captivating as his book surely is,—captivating for many by the truth that undoubtedly is in it,—the error of his method manifests itself in result unmistakably. And it is not hard to judge either how far any true science is from justifying his results. We will leave now his introduction, from which we have hitherto quoted almost exclusively, and take in evidence but two or three passages from the body of the book. Here is a very positive statement from his paper on "Conformity to Type" (p. 297):—

"We should be forsaking the lines of nature were we to imagine for a moment that the new creation was to be formed out of nothing. *Ex nihilo nihil*—nothing can be made out of nothing. *Matter is uncreatable and indestructible;* nature and man can only form and transform."

Notice that he is talking here of new creation—of God's work in the soul. And yet in the face of this he quietly says, "*matter* is uncreatable." Is then this new creation one of "matter"? If not, why speak of this? if it be, then that which Scripture calls creation he says is not such! And this must be held if we would not forsake the lines of *nature!* "*Nature* and man can only form and

transform." Theology certainly never taught that nature could create: does science teach that God cannot? how great, to be sufficient, must the number of observers be to prove so great a negative? and what observers should we consider "competent" for this? Is this not a wonderful induction from the fact that it is not in man's power to *un*create, nor in nature's to commit suicide, that therefore *God* cannot create? Is it not rather unspeakable folly and impiety, let who will be guilty of it, to force nature thus into blasphemous revolt against her Maker? Nay, nature will not be forced: "but who art thou, O man, who repliest against God?"

Again, in his paper on "Eternal Life," p. 236, he quotes approvingly from Reuss, as discovering in the apostle's conception of life, first,—

"The idea of a real existence, an existence such as is proper to God and to the Word; an imperishable existence—that is to say, not subject to the vicissitudes and imperfections of this finite world. This primary idea is repeatedly expressed, at least in a negative form; it leads to a doctrine of immortality, or, to speak more correctly, of life, far surpassing any that had been expressed in the formulas of the current philosophy or theology, and resting on conceptions altogether different. In fact it can dispense both with the philosophical thesis of the immateriality or indestructibility of the human soul, and with the theological thesis of a miraculous corporeal reconstruction of our person; theses, the *first of which is alto-*

gether foreign to the religion of the Bible, and the second, absolutely opposed to reason."

Here we find at once the affirmation of the materiality of the soul, and the denial of the doctrine of the resurrection: with the last of which the apostle affirms goes overboard the entire truth of Christianity. (1 Cor. xv. 12–18.) And this confirms the worst meaning of the extract made before. Annihilation is only a lesser evil accompanying it, and this the definition of eternal life which he accepts from Herbert Spencer distinctly corroborates, for eternal life is according to it nothing but eternal material existence, and the whole question with Prof. Drummond in his essay on it is, how to escape extinction at death. That he who does not here receive eternal life must become extinct without a resurrection, is the natural corollary.

One more extract from the essay on "Environment" (p. 281):—

"The completion of life is now a supreme question. It is important to observe how it is being answered. If we ask science or philosophy, they will refer us to evolution."

And he goes on to speak of struggle for life, etc., the elements of the most extreme Darwinian form.

Thus it is plain how for our author science must purify theology, and the iron yoke which we are called upon thus to receive. Yet the fascination even for Christians of a book that contains such

things is a proof that it appeals to something within us which needs to be met, and that it contains also truth which must be eliminated from the error. Here as elsewhere we must, as God by Jeremiah warns us, "take forth the precious from the vile," that we may be as His mouth. (Jer. xv. 19.) The vitiation of the conclusion with Prof. Drummond may be plainly traced to error in the method. That here pursued is, as will at once be seen, entirely different. I accept as truth, and have done long before his book appeared, that the natural world is, in the whole of it, as it were, an incarnation, a visible representation of spiritual things. Nature I accept as I do Scripture as a witness for God of the most precious kind. But here Scripture it is, not nature, that is decisively His revelation. By His Word alone can we rightly understand His works; and here we have a most fruitful principle, which needs only *fully* to be believed and followed, to show how fruitful and valuable it is. But, first, it needs—and it is strange that it should need, among any who accept Scripture as of God,—to be clearly stated, and justified from suspicion, before we look at the results to which we shall be led by it.

CHAPTER I.

Scripture as a Source of Knowledge.

OUR method at least is a very simple one. It is to appeal to Scripture freely, and in the first place, seeking to use it according to its full value, in faith that it has the highest possible value; in short, that upon whatever it may speak, it will give us, as the Word of God must, truth without any mixture of error, truth that will bear the utmost scrutiny, and stand every possible test. It would be a grand thing, would it not? to have such a standard of appeal, if it could only be proved that we have such! Yes, indeed, if it could be proved! But has not Prof. Drummond told us, "The old ground of faith, authority, is given up"? And is not this appeal considered by many as only the refuge of weakness, a credulity which stultifies reason, and would stop the onward march of scientific achievement, even if it did not put Galileo once more into the hands of the inquisitors, and burn Giordano Bruno at the stake? Of the last, there is perhaps no immediate danger; but it is plain that, in opposition to the modern one, with all its glory of brilliant discovery upon it, the method we are to

pursue will seem antiquated, worn out, with none of the vital energy of youth in it, and one which has been losing ground for long continually in its conflict with the scientific,—"extinguished theologians," so it has been told us, "lying about the cradle of every science as the strangled snakes beside that of Hercules." Happily for the theologians, it is generally found that the precocious infants get to be of milder manners after they have left the cradle, or no doubt the race would be extinct.

Is the old ground of faith, authority, given up? And have people learnt, with Prof. Huxley, for justification by faith to substitute justification by *verification?* Then, if the verification is meant to be, as of course it should be, personal, it will go hard with much that we have counted knowledge. How many have verified for themselves the leading facts and principles of any one of the sciences? And if, as Mr. Lewes says, and as we all know, "the psychological law that we only see what interests us, and only assimilate what is adapted to our condition, causes the mind to select its evidence," then what hope is there of attaining truth by means of evidence gathered in this way by those for whose power to see aright it is wholly impossible to answer?

Says St. George Mivart:—

"Believers have been warned, *usque ad nauseam*, that a wish to believe vitiates all their arguments. But what weight can we attach to conclusions such as those, *e. g.*, of Prof. Huxley, who tells us, with regard to the doctrine of Evolution, the position of complete and irreconcilable opposition which in his opinion it occupies to the Church is '*one of its greatest merits in my eyes.*' A similar, though less striking, theological prejudice is also exhibited by Mr. Darwin himself. He tells us himself, in his 'Descent of Man,' that in his 'Origin of Species' his *first object* was 'to show that species had not been separately created;' and he consoles himself for admitted error by the reflection that 'I have at least, as I *hope*, done good service in aiding to overthrow the dogma of separate creations.'"

If others, then, are to verify for us what certainly we cannot all verify for ourselves, what is this but the bringing back again of "authority" for the mass, and the establishment of a board of directors only instead of Scripture,—Huxley and Darwin instead of Peter and Paul? But why, then, the refusal on the one hand of what they contend for on the other? Is it even sincere? Nay, does not the special use of this doctrine of verification appear as something "one of whose greatest merits" is that it shuts off even inquiry about heaven or hell or a future life, things which, in the way contended for, nobody can verify?

Every one that cares may know that Prof. Huxley puts inquiries of this kind on the same level with

"lunar politics," and that to make the little corner of the world in which one lives a little less miserable and ignorant, as his duty is, "it is necessary to be fully possessed of only *two beliefs:* the first, that the order of nature is ascertainable by our faculties to an extent which is practically unlimited; the second, that our volition counts for something as a condition of the cause of events. Each of these beliefs," he says, "can be verified experimentally, as often as we like to try." Beyond this, he conceives we have but the *Maya* of the Buddhist—illusion. And a writer in *The Westminster Review* generalizes this as the conviction of the scientific man, of whom he says, "Above all things, he is silent in the presence of truths (or falsehoods) which he has ascertained to be beyond his reach. And he *commands* equally, in respect of these, silence on all others of mankind."

Thus it is very clear how a board of such directors would extinguish the theologians. And the very ignorance as to all that it imports man most to know, and of what in general he craves most to know, that very ignorance which pleads so strongly for the need (and so the fact) of revelation, is made the all-sufficient argument against it. The learned scientists of the agnostic school—in plain English, the school of ignorance—*know, by reason of their own ignorance*, that while all other instincts are provided for, this one, as strong as any, has and can

have no provision made for it. And the One whom they have decreed to be the Unknowable, by that very decree they declare they know so well as to know that He cannot (or will not) reveal Himself to man! For if He *be* the Unknown, they cannot even pronounce Him the Unknowable; and if He is *not* the Unknown, then the Unknowable He cannot be.

But are faith and verification really, then, so far asunder? Is there no possibility of reconciliation between the two? Must the most absolute faith even be credulity? or can there be no verification of authority itself, so as to justify the simplest faith in it? How, then, are we to verify the board of directors? though indeed we are ready to confess that an enigma most insoluble to the most thinking man. But in the case of revelation, if it be possible to verify this as the word of God, will any one say that God is to be trusted only so far as we can verify His word as true,—that is, not so much as one would trust a man of the most ordinary repute for veracity?

Scripture does surely not refuse to submit itself (in this manner) to verification,—nay, it appeals to it. Who can be so credulous as to believe that it requires "blind" faith, or would be honored by it? who that has ever read it,—aye, and who that knows whereof he speaks would dare to affirm that its principal proof even is (according to Mr. Huxley's

sneer,) that its "verity is testified by portents and wonders," when its solemn attestation is, that if men "believe not Moses and the prophets, neither will they be persuaded though one rose from the dead"?

Scripture itself is in fact one of the very greatest "portents and wonders" to those who will give it that patient and reverent examination which its claim demands. And for this it offers itself, not merely to the trained man of science, or to the man with abundant means and leisure to investigate. Its gospel is preached to the poor. Like the light which is its emblem, it shines as directly down upon the rustic as on the philosopher. "*Light* is come into the world," says He who brought it. And the conviction of light is something simple and immediate for those who have eyes to see. It is not the result of a long process of reasoning, where the chain is no stronger than its weakest link, but of a true verification, by the illumination of what it shines on: "that which doth *make manifest* is light."(Eph.v. 13.)

Grant this, and who will protest against its authority, or deny its absoluteness? Is not light for the man of science, as for the peasant, authoritative? And here is that in which men of all color, caste, and social standing rejoice together. Light, true and beneficent autocrat as it is, is at the same time the greatest leveler: one of those free gifts of God

which in their common diffusion would proclaim all men His offspring; one of those silent witnesses against the pretension of agnostic imbecility which, as it proclaims darkness to be light, would quench the true light in darkness. How thankful beyond expression may we be to escape the board of directors, and receive our light from heaven rather than from the "Sufficient Number of Competent Observers" Gas Company advertised by Prof. Drummond! Yes, note it, ye natural observers, ye disciples of physical science, here is a law of nature, something in which we "stand face to face with truth, solid and unchangeable," a veritable "spiritual law in the natural world"—*all the light of the world is from heaven.*

Test it, as much as you will; put it to use, and it will light up every thing it shines on. Do not fear that it will leave you timidly groping in the dark, still less put out your eyes that you may see the better. There never was a book more fully submitting itself to investigation, never a book that so looked you in the face while speaking to you, never one with the marks upon it of such absolute truthfulness. Simply and unadulterated, the priestcraft with which men would confound it dares not use it for its evil purposes. The man who does use it truly and reverently may be trusted as true and reverent. Mark out on your map of the world the

regions of what even the agnostic would call the fullest light, and you will mark out the regions of an open Bible. And this is mere trite commonplace, thank God: that is to say, every one is witness that the light shines!

We are not, however, studying Scripture evidences: we are merely pointing out their nature. The evidence will come when we have to show the light that Scripture throws upon nature. But it is wise to move step by step here, planting each firmly before we take another. Every step is contested, not only from without, but, alas! also from within professing Christianity itself; and to move surely we must move slowly. Nature is above all that which many professed believers are yet very chary in admitting to be even very accurately represented in Scripture, and if so, of course we need not expect any light upon it from this source. The man of science is met half-way by the concessions of the theologian, who thinks to save the centre of his battle by handing over his right wing to the enemy. No wonder if even an infant science should "extinguish" such defenders. We would gladly aid it even to accomplish this, assured that it would be an immense good if Christians were made to realize the only possible conditions of successful conflict. By all means let Hercules extinguish the "snakes," though that is Huxley's comparison, not ours, for

we do not in the least insinuate falsehood or treachery in the men who do this, although it is certain they are playing Satan's game.

What is it to attribute inaccuracy to Scripture, but to say we must no longer speak of it as the Word of God? *Satan* "is a liar, and the father of it." God is no more "a man that He should lie," than He is "the son of man, that He should repent." And this applies equally to all subjects. He could no more give me false physics than false arguments,—untrue statements as to sun or moon or firmament, than as to Christ or to salvation. Once admit a possibility of error, though it be infinitesimal, it must shake conviction as to the whole. And the Lord Himself puts His reliability as a Teacher precisely on this ground. "If I have *told you earthly things*, and ye believe not, how shall ye believe if I tell you of heavenly things?" Take away the truth of Scripture in matters in which it can be tested, how shall we accredit it in those where it cannot be tested? "He that is faithful in that which is least is faithful also in much; and he that is unjust in the least is unjust also in much." Such are the moral principles of the Author of Christianity; and by these we for our part are entirely willing that it should be judged. For with the Word of God what may be pleaded for man may not be pleaded. Man is fallible and ignorant,

where yet he may be honest and true; but we cannot plead a mistake of the Omniscient, and call him who makes the mistake omniscient any longer.

Of course it will be said that all this depends upon certain views of inspiration, and (some will think) views in our day sufficiently disproved. It pleased God to take up men as instruments to declare His truth, and inspiration guarded them at most only with regard to their special subject. It did not make them competent as men of science, or in ways irrelevant to this. And as to the last, it may be fully granted. Nor would any proficiency in science have enabled Moses to write the first chapter of Genesis,—a table of contents, as it may be shown to be, of the whole Bible. Yet he writes as one thoroughly at home in his subject, with an ease and confidence, yet a most natural simplicity, which, without laboring to do so, impresses one with the assurance of absolute truthfulness. Taking it at its full worth, as far even as known, natural fact and spiritual type, as it is, combined, one would not hesitate to rest the whole argument as to the truth of Scripture upon the proof in that first page of it alone.

Yet no doubt Moses knew as little of what fullness of meaning is contained in these words of his as the prophets did of their prophecies, which Peter witnesses they had to search in order to find

in them the assurance of things beyond their utmost searchings: "Searching what or what manner of time the Spirit of Christ which was in them did signify, when it testified beforehand the sufferings of Christ, and the glories that should follow; unto whom it was revealed that not unto themselves but unto us they did minister the things which are now reported unto you by them that have preached the gospel unto you with the Holy Ghost sent down from heaven; which things the angels desire to look into."

Here, assuredly, were men not merely doing the best they could, but better than they knew, things which were consciously beyond themselves, and worthy of angels' occupation; and this, though spoken directly of prophecy, shows how "holy men of God spake as they were moved of the Holy Ghost." And why should it be confined to prophecy? Historical events, if we may believe the apostle, things that "happened unto" Israel, "happened unto them for *types*, and are written for our admonition,"—so that these also as types are prophetic! And why should this be confined to prophecy? Who shall presume to draw the line between what was necessary and what unnecessary, in the divine design for us, so as to be able to say, Here absolute truth had to be insured, and here men could be left to their unassisted wisdom? The

purpose of Scripture is larger and more various than we can divine; and who can affirm even that such and such facts of science may not be necessary to be revealed in order to its full accomplishment? Is it not humbler to inquire what God *has* told us, than to speculate upon what He *means* to teach us? If nature be in any way His lesson-book for us, why should it not be part of His design to help us to read its lessons? Nay, would we not in fact expect this? and would not this modify to a large extent the conclusion (or assumption) that Scripture was not intended to teach us science?

"Which things we speak," says the apostle, "not in the words which man's wisdom teacheth, but which the Holy Ghost teacheth." Even here it is asserted that there is no claim of verbal inspiration. It has been said, "The term here is *logos*, which denotes rather propositions than mere 'words.'" But suppose this so, if propositions are (all of them) by the Holy Ghost, do the words have nothing to do with the propositions? would not the words used be those best suited to define the propositions?

But the citations of the story of Melchisedek, which we find in the epistle to the Hebrews, carry us far beyond this, and show the extent to which it is to be taken. Here the very *omissions* of the history are insisted on as having significance, as well as what is actually stated, and the whole argument

is a pregnant instance of that use of the microscope in Scripture which is quite as brilliant in result as it is known to be in natural science. "For this Melchisedek, king of Salem, priest of the Most High God, who met Abraham returning from the slaughter of the kings, and blessed him, to whom also Abraham gave the tenth part of all, *first*, being by interpretation, 'king of righteousness,' and then, after that, king of Salem, that is, 'king of peace,' *without father, without mother, without descent, having neither beginning of days, nor end of life*, but made like unto the Son of God, abideth a priest continually." (Chap. vii. 1–3.) Now it is evident that the main force of the interpretation depends upon the points which I have emphasized, and it should be as evident that these points depend upon what we should be apt to call mere gaps in the record. It has been indeed supposed by some, from the statements made by the apostle, that Melchisedek was the Son of God Himself; but this the very words, "made *like* unto the Son of God" forbid.

Here, along with the interpretation of the gaps, we have that of the names, and the *order* of the names, and the whole woven into precise argument as to the doctrine of Christ's priesthood.

It is plain, then, that, according to this, he who wrote the history of Genesis has been guided by a

wisdom far beyond his own, and in matters of minute detail, in such a case as we might have imagined could not have required it. Who shall decide, then, in *any* case that it did not? Another instance, in which we have the authority of the Lord Himself, is perhaps however even more decisive; for here no type is in question, but the simple use of a term—a very strong term, we should be apt to say,—for the judges in Israel, whom the eighty-second psalm calls "gods" as representing God: "I have said, ye are gods." In the tenth chapter of John's gospel the Lord quotes this to the Jews: "Is it not written in your law, 'I said, ye are gods'?" and then founds upon it an appeal, "If He called them 'gods' unto whom the word of God came," and then adds His seal to the absolute authority of that from which he quotes:—"*And Scripture cannot be broken.*"

Surely nothing can be more positive, nothing wider in reach than this: "Scripture"—not merely this or that passage, specially guided or guarded, because of special importance, but *Scripture*, as Scripture,—"Scripture cannot be broken." Is it then the statement that "In six days the Lord made heaven and earth, the sea, and all that in them is," or any other, however insignificant it may seem to us, if Scripture makes it, then its truth is guaranteed—"Scripture cannot be broken."

Difficulties of course may be pressed, nor is it here the place to examine them. Solve a hundred to-day, another hundred may be found for solution to-morrow. As to what principle of science is it pretended that all difficulties are removed? and who waits for this before he thinks of certainty? How much less does the Word of God need to wait for this, a requirement which would destroy the possibility of certainty as to any thing whatever.

That "Scripture cannot be broken" is the divine axiom with which we set out, and in this way what a field for examination does it present to us. True, we have had it in our hands for eighteen centuries, yet how fresh is it to-day! how little exhausted! in some directions how little even explored! and certainly in few less than that which we propose, in dependence upon the Spirit of God, the only sufficient Teacher, now to explore. Throughout we desire to take the attitude and possess the spirit of learners while we do so, and so to proceed step by step, patiently acquiring what we may, and owning the gaps in our knowledge where they exist.

CHAPTER II.

God's Twofold Witness.

"THE testimony of two men is true," says the "Faithful Witness." He appeals to the law for this, and the law speaks as follows: "One witness shall not rise up against a man for any iniquity, or for any sin, of all that one sinneth: at the mouth of two witnesses or at the mouth of three witnesses shall a matter be established." (Deut. xix. 15.) The apostle also cites this law of witness, to which God has very plainly conformed His manifestation of Himself to man. For nature and Scripture are just this twofold testimony in its full breadth; while yet He has so constructed His Word as to be itself twofold, and so sufficient. The Old Testament thus unites with the New, and who that has considered it in the least but must appreciate the power of this for conviction? For such power in twofold witness proceeds largely from the diversity of character and interest that they present. They are otherwise different,—contrasted; yet here they agree: different in such sort that you realize there is no collusion between them,—no treachery; nothing but the necessary unity of

truth could made them one. And how will this be strengthened in proportion as the contrast is manifold, and yet the unity pervasive: and this in the two Testaments is what so demonstrates them to be of God.

The Old Testament is in Hebrew, the language of a special people, with whose history it has grown up, and to whom it addresses itself. It is the religion of a nation, one of the families of the earth, its horizon earthly, its sanctuary a worldly one, its services ritualistic, ornate, elaborate, intrusted to a special priesthood. God is here behind a vail which none can penetrate; man—all men—are shut out; none can see Him and live; for merciful as He is, He cannot clear the guilty, and who (let him do his best) is *not* guilty?

This legal, sacerdotal, exclusive system, the incarnation of conscience, but a bad conscience, in what utter contrast is it to the free, spiritual, all-embracing spirit of Christianity! "The Lord hath said that He would dwell in thick darkness," says Solomon on the day of the dedication of the temple. (1 Ki. viii. 12.) "We walk in the light, as God is in the light," answers the apostle. (1 Jno. i. 7.) "Who can by no means clear the guilty," says the Old Testament voice. (Ex. xxxiv. 7.) "That justifieth the ungodly," says again the New Testament. (Rom. iv. 5.) "No man can see Me and live," is

the elder utterance. (Ex. xxxiii. 20.) "He that hath seen Me *hath seen* the Father," are His words who is Himself the spirit incarnate of the New. (Jno. xiv. 9.)

Here are two witnesses how diverse: can it be that after all under these statements, so seemingly conflicting, there is nevertheless a perfect unity? can there be a fullness of truth which embraces and harmonizes all? Yes, surely: admit what the New Testament so abundantly affirms and illustrates, the essential opposition between law and grace, and yet that the first is handmaid to the other;—then, on the basis of law, all the Old-Testament utterances are but the sentence of God upon the self-righteousness of man; while the New Testament reveals the heart of God in grace, upon the basis of a righteousness by which the law also is magnified and made honorable, and able to forego its penal claim.

Thus they can be reconciled; but is this reconciliation an after-thought? Is it perhaps a human, though wonderfully wise, contrivance for adjusting matters between them? Are there perhaps yet two authors instead of one; and these still human, not divine? This question, so necessary to be answered, receives from the Old and New Testaments together its full and entire satisfaction in the consideration of that typical system which pervades

everywhere the former, while it anticipates and prophesies the latter.

This typical system is, all through the Old Testament, the complement and corollary of the strictly legal part. If a soul stricken with the conviction of sin sought for relief and acceptance from God, it was shut up to sacrifice, the ordained way of approach for every one who would draw near to Him; and here he found what, except in its typical teaching, contained no ray of light. Why should the blood of an animal shed by the hand of the offerer avail before God for the sin of him who shed it? You must illumine that with the light of the gospel before you can understand it. Understood, it is then the illumination of all else: it is the establishment of law; it is the vindication of grace; it is the heart of God bursting out over all the barriers that man's sin could oppose to it,—God who is light, now in the light, revealed.

Yes, the witnesses are one; their testimony is one; they have one Author; grace is no afterthought. The later word, addressed in his own language to the Gentile, is but the necessary development and issue of the earlier one. The earlier is interpreted by the later: the typical communication by the plain speech now.

Thus, then, as to the testimony of the written Word. But now if there be another testimony to

God, and the book of nature be also His book,—and Scripture itself affirms this, yea, who that believes in God could deny it?—then these two witnesses must also agree in one, and that which is enigmatical and obscure be interpreted by the clearer,—the earlier, therefore, once more by the later, and not the reverse. Notice, too, that there is no ground for wonder, if the two should seem not only diverse in character, as they are, but contradictory even, which they are not. We might expect this; while, by the analogy of Scripture, we may expect also that this apparent contradiction will end in clearer agreement at last, and in greater breadth and fullness of testimony.

Even as we consider this now, the reality of the analogy between the book of Nature and the Old Testament comes into fuller light, and gains assurance. If the Old Testament be the proclamation of law, and this be its supreme characteristic, how easy it is to see that *Nature* is even more emphatically in some sense the *kingdom of Law.* This is, in the eyes of more than Prof. Drummond, what gives to it order and solidity. Grace here assuredly seems, at first sight, to have no place, nay, to be in contradiction, until we are reminded that in the elder book of Revelation it is in *symbol and type* that we find the teaching of this, and are led to realize that Nature itself, more entirely even than

the Old Testament, is an object lesson, a divine hieroglyph, a type-teaching. This it surely is; and although as a whole we may not as yet have the full key, yet in all ages nevertheless its lessons have been taught and learnt,—in the earliest perhaps most simply. As we grow older we lose the unsuspecting faith of childhood, which in many respects is the truest wisdom; our very language, which was at first pictorial, becomes hard and abstract, its symbols merely arbitrary and algebraic, divested of the heart and pathos which men drank in first from nature's breast, and now have learnt to be ashamed of as the babble of the nursery.

But we are coming back to Nature! perhaps: yea, to such extreme faith in it that now our one knowledge is to be that of natural science, and beyond it we are agnostics—know-nothings. If that were so, it would be but the surest proof that the old *faith* in nature nevertheless is dead. I may use the words, but scarcely realize the *thing*, when I speak of faith in *laws*, or faith in a machine. Here, too, "the law is not of faith." The factory-rattle reason may interpret perhaps; but faith is of the heart, and there is *no* heart. We have got back to the old mythology, and understand how Chronos (Time) produces and devours again his children; but do not ask me, then, to confide in Chronos.

No: vanity of vanities, all is vanity. Let us eat and drink, for to-morrow we die.

Yet here a hint from that old Jewish law in which we have already found the character of a true witness may appeal to us. It was when man found himself as it might seem, in the grip of the law, and without hope from it,—when, though with the consciousness of sin upon him, he sought in his distress to God,—the law itself referred him to that typical system, in which the heart he sought in God was found. Is it not so again, that when we turn to Him it is, and only so, that nature reveals her really illuminated side, and warms and kindles as with a summer breath? Assuredly, it is so: and reason itself cannot rest satisfied short of that which satisfies heart, conscience, mind alike—not a part only, but the whole of man

CHAPTER III.

Nature in Scripture.

IF the work of God in nature, then, is admitted to to be any testimony to God at all, that is nothing else but folly which lies hid under what is supposed to be a self-evident truth, that "the Bible was not intended to teach us science." For if science be nothing else than reasoned knowledge, and if it be of importance that Nature should give true witness to her God, who shall presume to say that Scripture will not give us help in such a matter? Is it not, on the other hand, rather to be expected that it would do so? If its own question be, "Doth not nature itself teach you?" and if, after all, this teaching be not always so clear and explicit as to need no help to understand it,—(if it were, we could hardly put the doubt,)—then we should surely expect that at least the data for true science should be furnished us abundantly. That, after what men have decided, seems a bold thing to say; to many, no doubt, even to be evidently contrary to the fact. If so, we shall refute ourselves, before we have traveled a good half our proposed journey. The answer will be found, then, as we proceed with it.

Scripture being witness however, nature does teach. "The invisible things of Him are clearly seen, being known by the things that are made, even His eternal power and Godhead." (Rom. i. 20.) "The heavens declare the glory of God, and the firmament showeth His handiwork." (Ps. xix. 1.) The work must needs declare the Artificer; and the Worker is, we are assured, He who, because He is the Revealer, is called the "Word of God." (Jno. i. 1–3.) Creation must be, then, part of this revelation.

The parables and types of Scripture take up, therefore, and use Scripture to this end. They are not merely an adaptation of what has strictly another meaning. Rather, they develop what is there. It is in this way that they become so significant for the interpretation of nature. Analogies of this kind we argue from constantly without apology, and without suspicion of deception. They are the marks of the One Mind which everywhere delights to show itself to us, and thus would make all things intelligent to creature intelligence. The proof is that it really does this: as light, it illumines.

The men of science have a name for a principle which underlies this. They call it the "principle of continuity." Of this Prof. Drummond has well said:—

"Probably the most satisfactory way to secure for one's self a just appreciation of the principle of continuity is to try to conceive the universe without it. The opposite of a continuous universe would be a discontinuous universe, an incoherent and irrelevant universe—as irrelevant in all its ways of doing things as an irrelevant person. In effect, to withdraw continuity from the universe would be the same as to withdraw reason from an individual. The universe would run deranged; the world would be a mad world. . . . The authors of *The Unseen Universe* conclude their examination of this principle by saying that 'assuming the existence of a Supreme Governor of the Universe, the principle of continuity may be said to be the definite expression in words of our trust that He will not put us to permanent intellectual confusion, and we can easily conceive similar expressions of trust with regard to the other faculties of man.'"

Now, if this be true, as it surely is, the continuity of Nature and Revelation is assured. It does not imply, as our author would seem to make it, that the book of nature will be the simpler to read, the surer to follow, therefore in fact the more authoritative, but the reverse. For if nature-teaching be essentially that of parable, no parable is primarily authoritative as to doctrine; and though still of an importance hard to be exaggerated, it leaves Scripture as that in which alone God speaks to us "face to face."

Yet nature remains unfallen from its place as the eldest of revelations. There is nothing fallen but

man, and even his fall has only in a sense confirmed its witness to us as from Him to whom man's ruin is no surprise, and redemption no after-thought. Assuredly, such a world of conflict and destruction, beast preying upon beast, down to the minutest being that comes under the microscope, would be to an unfallen being an inharmonious and incongruous mystery. How striking, then, that we find the yet unfallen parents of our race shut off from it in a specially prepared and sheltered garden of delight, which might be for them a better witness of Creating Love,—a memory of blessing to them when fallen. Then, when at last sent forth into the earth, with the new strife that had been awakened in their souls, they could find from the conflicting elements around, with which they were in so manifest sympathy, the assurance of omniscient foresight undeceived and undethroned.

Has science done aught but deepen this thought, when it bids us note that the very ground they trod upon was already the wreck of former worlds? yet that mountain-upheaval, and glacier-plow, and the long list of catastrophic forces had been used of Him whom Scripture reveals as the God of resurretion, to prepare and fertilize and beautify their yet wondrous dwelling-place?

And this Scripture also confirms, even though we may have been a long time coming to read it right,

and for this too are indebted, as they say, to science. Science did not, however, put it in the book of Genesis, that while God in the beginning created the heavens and the earth, *before* the first day's work the earth was waste and empty, and darkness on the face of the deep. Then the Spirit of God and His Word bring in the light, and the work of renewal begins.

Here the analogy, then, is perfect. The history of the earth is the prophecy of the man who is to be put upon it; and this prophecy proceeds step by step with the history of the six days, creation being the type of new creation, until the Man comes for whom all is destined, the first man here the type of the Second, Christ, who is the Heir of all. This can be shown even minutely, though here is neither time nor place; and the spiritual significance is the seal of the natural, the perfect assurance of whose inspiration has guided Moses. But we must pass on.

Spiritual law then governs the natural world. God, the Creator, is the "Father of spirits," and to spirits He speaks in it. Nature is, to him who has the key of it, one vast object-lesson of spiritual things. Did we know it, what a different world would the world be to us! How full of reason would all things become! How should day to day utter speech, and night to night tell knowledge!

How would we realize in our daily toil the presence of God! How would all the natural sciences become Christian sciences, and only what was unnatural be at last unchristian! A dream, you say? Well, then, at any rate, suffer a little while the dream; and if it should after all be found so rational as to fill all else with reason, so lightlike as to fill the whole landscape with color, warmth, and beauty, so spiritual as to connect all things with God, then it will be worth while, surely, to inquire how far the realism of such a dream can differ from reality itself.

We take Scripture with us as we go forward—Scripture that cannot be broken, the true Ithuriel's spear by the touch of which all falsehood is discovered; Scripture, not as the poor thing that men have made it, a rush that one cannot lean upon, a sensitive plant that shrinks from contact with the realities around, but as the weapon of the Spirit, sharper than any two-edged sword; as the staff of the pilgrim, more trusted the more used; yea, as the word of Him, from whom nothing is hid, and of that Spirit who "searcheth the deep things of God."

There are wide fields before us, reader. Let us go forth.

CHAPTER IV.

Natural Mathematics.

MATHEMATICS give us the "exact sciences." "Solid" as Prof. Drummond tells us the laws of nature are, in mathematics at least they are so, beyond the possibility of intelligent question. No one, that I am aware, has ever accused them of poetic license, although poetry on her side does not refuse their alliance. And as we build our foundations of what we can find most solid, it need be no wonder that in proportion as we go down to the foundations of the earth, so do we find mathematics more and more revealing themselves in proportional numbers and in geometric forms. Chemistry has become in our day penetrated with arithmetic; and chemistry deals with those elementary principles, the combination of which gives us the material world. "Chemistry," says Herschel, "is, in a most pre-eminent degree, the science of quantity; and to enumerate the discoveries which have arisen for it from the mere determination of weights and measures would be nearly to give a synopsis of this branch of knowledge."

What is this but as if you were to go into some

ancient structure, as the pyramids, and find upon the stones the builder's hieroglyph? We have been only learning to find deeper truth than we were at all aware of in the prophet's challenge, "Who hath measured the waters in the hollow of His hand, and meted out heaven with a span, and comprehended the dust of the earth in a measure, and weighed the mountains in scales, and the hills in a balance?" (Is. xl. 12.) What science of the day in which that question was asked knew any thing about such measurement? How many centuries has it taken to bring man's tardy feet to where the prophet stood? But we are able now to see that we may take this as true in the most absolute way, that every bit of the earth's dust is weighed and measured.

"The law of simple numerical ratios," says Dr. Cooke, "is the fundamental law of crystallography, and gives to the science a mathematical basis. Similar numerical relations appear when we study the formation of chemical compounds. I have already defined a chemical element as a substance which has never as yet been decomposed, and all the matter with which man is now acquainted is composed of one or more of at most seventy elementary substances. When two of these elements unite together to form a compound body, the proportions in which they combine are not decided by chance. You cannot unite these elementary substances in any proportion you please. The proportion in each case is determined by an unvary-

ing law, and the amounts required of either substance are weighed out by nature in her delicate scales with a nicety which no art can attain. Thus, for instance, 23 ounces of sodium will unite with exactly 35.5 ounces of chlorine; and if you use precisely these proportions of the two elements, the whole of each will disappear, and become merged in the compound which is our common table salt. But if, in attempting to make salt, we bring together clumsily 23.5 ounces of sodium and 35.5 ounces of chlorine, Nature will simply put the extra half-ounce of sodium on one side, and the rest will unite. This law which governs all chemical combinations is known as 'the law of definite proportions.'

"Tables will be found in works on chemistry, which give, opposite to the name of each elementary substance, a numerical value, usually called its atomic weight, and and in all cases where the elements are capable of combining with each other, they either unite in the exact proportions indicated by these numbers, or else in some simple multiple of these proportions."

Thus these elements are themselves manufactured articles, and are stamped indelibly with the Manufacturer's name. For nothing addresses itself more to mind as from mind than just such relations as are discovered here. As another has said, "The most careful structure of brown stone is not so precise in number, relation, and dimensions of its blocks as are molecules, the first terms in matter, in their atomic formation." It should be as easy, then, to refer the natural product to the workmanship of

eternal mind, as the recent structure to man's hand and mind. And who would have a doubt as to the latter?

Having got so far, moreover, ought we not to be able to go further? *ought not these numbers individually to have a voice for us*, and in their relation to one another also? If all things are full of reason, is it too much to expect that these proportions have a reason too? Oh, for some interpreter here! some master mind, lowly and reverent enough to follow out this clue, and tell us whither it leads! But we must not expect these elements to speak yet clearly. Pythagoras has given place to Darwin; and final cause to formal cause; and we must wait for the wheel to come round again.

As to relations as indicated by the numbers we have just a hint:—

"Attempts have been made in the same science," say M'Cosh & Dickie, in their work on "Typical Forms," "to form bodies into groups or congeners. M. Dumas, in particular, has detected a number of triads, or series of three bodies, which have analogous properties, and showing a singular numerical profession in their equivalent weights; the equivalents of two of these added together, and divided by two, giving approximately the equivalent of the third, thus:—

Chlorine	35		Potassium	40	
Bromine		80	Sodium		24
Iodine	125		Lithium	7	

Calcium	20	Sulphur	16
Strontium	44	Selenium	40
Barium	69	Tellurium	64

"'Regarding,' says Faraday, 'chlorine, bromine, and iodine as one triad, it will he seen that between the first and the last there is recognizable a well-marked progression of qualities. Thus chlorine is a gas, under ordinary temperatures and pressures; bromine, a fluid; and iodine, a solid; in this manner displaying a progression in the difference of cohesive force. Again, chlorine is yellow; bromine, red; iodine, black, or in vapor, a reddish violet.'"

This glimmer of light seems to have well-nigh gone out. The atomic weight of some of these has been since doubled, and of others more or less changed. At the best, it carries us but a little way upon the road we seek. None the less sure is it that there is a numerical impress upon all nature.

"Indeed," says Sir John Herschel again, "it is a character of all the higher laws of nature to assume the form of a precise quantitative statement."

And Humboldt declares,—

"It may be said that the only remaining and widely diffused hieroglyphic characters still in our writing—numbers—appear to us again as powers of the cosmos, although in a wider sense than that applied to them by the Italian school."

Much more might be said here, but it needs not to try more to establish what no science of the day will attempt to dispute. It is the meaning of admitted facts that we are seeking; and this is just

what is so hard to reach. Save in their testimony to an Author of nature, they are yet dumb and unspiritual: how shall we spiritualize them? Is it not possible—yea, rather, may we not expect, that God has given us somewhere some clue to their interpretation, by which we may follow on to find ourselves more in the presence of the King? Nature seems to us as yet dumb, and God, if we own Him there, yet distant; where shall we find, then, the interpreter we seek, if not in *Revelation?*

CHAPTER V.

Spiritual Mathematics.

THAT in her great typical system numbers have a place will be acknowledged by every student of Scripture. How far, however, both types and numbers pervade the whole is little understood, and will by many be with difficulty credited. It would lead us a long way round to try and prove it here, even though, I doubt not, the proof is most important.* We must content ourselves here with the proof of that which lies directly before us—the meaning of the numerals; and even here be briefer than we would, content to know that the best proof of a key is, that it unlocks the door, the best proof of a light, that it *gives* light. Our proof, after all, will be that the meanings of the numerals gathered from Scripture, and of course illustrating Scripture-truth, will yet be found to throw a new light upon Nature.

It should be no abatement of the value of this process if Nature be found by it to speak Scripture-

* For the proof in brief, I would refer my readers to "The Numerical Structure of Scripture," published by Loizeaux Brothers, 63 Fourth Avenue, New York; for the proof at large, to "The Numerical Bible," publishing quarterly by the same.

truth, and the result should be in some sense the opposite of that which (by an opposite process) Prof. Drummond seems to have reached; so that I may transfer a page of his preface to my own book, and appropriate it, only making Science and Religion to change places. Let us see how it would look.

"They lay at opposite poles of thought; and for a time I succeeded in keeping the Science and the Religion shut off from one another in two separate compartments of my mind. But gradually the wall of partition showed symptoms of giving way. The two fountains of knowledge also slowly began to overflow, and finally their waters met and mingled. The great change was in the compartment that held the [Science]. It was not that the well there was dried; still less that the fermenting waters were washed away by the flood of [Scripture]. The actual contents remained the same. But the crystals of former doctrine were dissolved; and as they precipitated themselves once more in definite forms, I observed that the Crystalline System was changed. . . . In other words, the subject-matter [Science] had taken on the method of expression of [Scripture], and I discovered myself enunciating [Natural] Law in the *exact terms* of [Inspiration] and [Revealed Truth].

"Now this was not simply a [scriptural] coloring given to [Nature]—a mere freshening of the [scientific] air with [spiritual] facts and illustrations. It was an *entire recasting of truth*. And when I came seriously to consider what it involved, I saw, or seemed to see, that it meant essentially the introduction of [Spiritual] Law into the [Natural] World."

I trust Prof. Drummond will forgive the changes I have made in his statements here. I am sure that they are serious; I only would that he might yet be able to adopt them for his own. Christians may well long for him that he may find spiritual truth conveyed in more "exact terms" by Paul and Peter than by Spencer and Huxley; and natural truth also sweeter from the lips of one with whom God spake face to face, than from his with whom the only knowledge of Him is that He is unknowable.

Let us take up our numerals, then. Scientists have told us that they pervade nature: surely we need not wonder if they have an important place in Scripture, or that *being* there they should speak there. Surely it is not unreasonable that the use of them should have its reason,—that He who has forbidden idle words should Himself not speak one!

The great proof in an explanation, as I have said, is, that it explains. And yet there is that which, in the Scripture-meaning of numbers, commends itself to us at the outset, and that is, that it is *natural.* The God of nature uses things according to their nature. He does not use water to regenerate a soul. He does not change bread into something that to look and touch and taste remains the same but is not. And so the spiritual meaning of the numerals also has its roots in nature. This rule observed helps greatly to restrain the mere lawlessness of the

imagination, of which we do well to be afraid. We can hardly go astray when all meanings of the number 1 must come under its cardinal form as *unity*, or under its ordinal, as *primacy*. Yet this number has the widest range of meaning of any. No doubt, it is also the simplest; but in each, some natural thought governs or leads to the spiritual,—already a hint as to nature-teaching; for the natural is no more alien to the spiritual than the body to the soul which it enshrines and expresses.

The numerical series is also a very brief one. As in music seven notes in their combinations furnish all our wealth of harmony, so seven numbers give the whole range of choral anthem which all nature sends up to God. These added to or multiplying one another can produce all else. And that the series really ends with this, Scripture makes plain by its use of 7 always for that which is in some sense perfect, though it may be evil as well as good.

The number has thus its root-meaning in nature clearly, which Scripture only takes up and confirms. How plainly is it shown us, thus, that the whole series is a harmony, and that in it Nature finds her voice in praise! A good thought to begin with, is it not? We find it confirmed in this, that the number 8 is always significant of a new start—a new beginning, as the eighth day is the beginning of a new week. 8 is the spiritual chord—the octave, just

marking in its fresh commencement that the former series is complete.

Let us test these things by some examples. Seven times God pronounces His work at the beginning good; and on the seventh day He rests, and sanctifies it. Here is evidently the foundation of its meaning in Scripture. From this first week Israel derived her weeks of days and years, and weeks of weeks of years, or jubilee periods. The trumpet of the jubilee sounded in the seventh month of the year, upon the day of atonement. In Revelation, seven seals secure completely the book taken by the Lamb; seven candlesticks present the Church as the light of the world in the night of the Lord's absence; seven lamps of fire burning before the throne picture the "seven spirits of God"—the various energy of the one Spirit of God. Later, in the seven vials poured out upon the earth is "filled up the wrath of God."

The connection of the numbers 7 and 8 is illustrated by examples which depend for their force upon no recondite typical significance. Thus the Lord represents the unclean spirit who returns to the man out of whom he had gone, with seven other spirits more wicked than himself. But this makes eight, and brings about the "last state" which "is worse than the first."

So the "ten horns" of Daniel's fourth beast have

three rooted up before the eleventh "little horn," and become, therefore, with this, eight; and then results the last state of the beast, in which judgment falls upon it. In Rev. xvii., where from another side the same things are seen, the eighth head gives to the beast its last blasphemous form, and "goeth into perdition."

The types of the Old Testament have many similar examples, which a very little examination will reveal to the inquirer. We need not perhaps produce more here. Another and very striking proof of the concord between nature and Scripture has now to be considered.

Scripture has its own methods of division of the numerals it employs, and the number 7 is no exception to this. As being a prime number, it cannot, of course, be subject to true division, but is well known by many to be divided in Scripture almost uniformly into $4+3$. Thus in the sevenfold view of the kingdom of heaven in the thirteenth chapter of Matthew, the first four parables are spoken to the multitude at large, the last three to the disciples in the house; and this corresponds to a real difference of application,—the first four giving the external view of the kingdom, patent to the world at large, while the last three give the internal and divine view.

Again, in the opening of the seven seals in Reve-

lation, the first four are introduced by the cry of the living creatures, "Come,"* and in each case a horseman answers to the call; the last three have no such introduction.

In the trumpet-series, the last three are marked off from the first four as special "woes;" and the division is strongly emphasized.

In the addresses to the seven churches, the same division is found, but less manifest; and in Scripture generally there are numbers of similar septenary series divided after the same manner, the proof of which would require more space than is available for us now.

There is meaning, of course, in this division. We have assumed it at least as a principle,—the only one that could be at all fruitful in an inquiry like the present, that whatever is, whether in nature or the Word of God, has its *raison d'être*,—can give some intelligible account of itself; otherwise, why look for it? And it is just because things are so little sought for that they are so little found. To find the meaning here, we must anticipate, however, what has not yet been brought out, but what we shall have shortly to look at, so that it will be only slightly out of place to produce it here.

Four, then, we shall see shortly to be the world-number, or that which speaks of the creature;

*The most approved reading.

proof will be full as we advance; *three* is the number of *manifestation*,—that of the Trinity, in which God is alone fully manifest. The $4 + 3$, then, into which a septenary series is so often divided, combining these meanings, speaks of the creature as that in His relation to which now God is manifested; and thus it completely answers to its end. God rests, therefore, in satisfaction with His work, on the seventh day.

If clearness and consistency can avail to make it, this interpretation, then, may be allowed to stand. But we have now a strange, even startling, correspondence from the side of nature, which will develop more significance as we proceed. If the seven notes of music are the natural root of the Scripture meaning, it is to music we may look for any obtainable help further. How striking, then, is the division of these notes in music! Upon the key-board of a piano we find them arranged thus:—

the five black notes are grouped as 3 and 2: three black notes divide four white ones; and again, two

black notes divide three white ones. The *seven* white notes accept the scriptural division into 4 and 3!

Here is a clue which we must follow; but we are not prepared to do so yet. We shall have first to inquire as to the meaning of the other numbers, which it is plain we can now arrange upon the keyboard without difficulty. As yet, indeed, they do not *speak;* but they have at least *approached* articulate utterance. They seem already to intimate their accord with Scripture when it tells us that in relation to the creature God shall be manifested. Will they do more than this? We will go on and see, at least.

One.

It has been said that the first number has really but two thoughts fundamental to it. As a cardinal number, it speaks of *unity;* as an ordinal, of *primacy.* No proof is needed that of these it *does* speak.

But the application of these thoughts may be wide and far-reaching. With regard to unity, this may exclude a *second*, or exclude simply *difference;* and the latter may be either *external* or *internal.* "The Lord our God is one Lord" excludes absolutely another Lord; and this implies on His part *sufficiency* which needs no other, and *independency* which admits no other. And these, again, imply His *eternity.*

Or it may exclude external difference; and speak thus of identity, identification; or simply of peace.

Or it may exclude *internal* difference, as where Joseph says, "The dream is one." It may thus speak of harmony of parts or attributes,—of consistency, congruity. Or else of individuality,—in the highest way, personality; in the lowest, perhaps, of life, which is the basis of all true individuality. Integrity, again, is "wholeness," oneness.

Now, as an ordinal number, the first, the beginning: He who is in true active energy the beginning, is Creator, Life-giver, Father; counsel and election connect with it; and sovereignty is implied in all of this.

Two.

The number 2 is the contradiction of the first number: there *is* now another. In a good sense, it speaks of addition, increase, growth; and so of help, confirmation, fellowship. Our word "seconding" expresses these latter thoughts. (Comp. Eccles. iv. 9–12.) Here we have,—

1. Confirmation in the way of *testimony:* "The testimony of two men is true." And we have seen that the power of this confirmation depends much on the diversity of the witnesses (2 being the expression of difference).

2. Salvation, help.

3. Dependence, humilation, service: "seconding" again assists the thought.

Notice, now, that in Christ, the second Person of the Godhead, all these thoughts unite. Twofold in nature, who can unite in one person such diversity as He? He is the Second Man. He is the true Witness and the Word of God. He is the Saviour. He was the dependent, lowly Man, humbling Himself even to death for our salvation. This whole meaning, thus far, attaches to, and holds forth to us, Christ.

But on the other side, as the number of difference, and the first number that divides, the number 2 speaks of contrast, contradiction, conflict, enmity,—of separation, death, which is that and the "last enemy." Yet here again, as if Christ must be everywhere Master, the cross, in which the conflict between good and evil, the enmity of man's heart, the power of the enemy, death in its most awful form, are found,—is once again salvation. Nowhere is the contrast so great, the contradiction so extreme, as in the cross.

Two is naturally also woman's number, and she illustrates it well. Full again of contradictions,—dependent on man, yet his helpmeet; and yet again the one through whom the breach came; the type of increase, yet through whom came death, and then

once more, through her victorious "Seed," salvation. Surely these numbers speak!

Three.

We come now to 3: and for what does 3 stand? Plainly it is the symbol of cubic measure—solid measure—the measure of content. "Take any two dimensions, and multiply them together: what have you? A measure of surface merely. Take a third dimension; now you have more than surface: this third dimension strikes in deep below the surface, and gives you a measure of solidity. 3 stands, then, for what is solid, real, substantial. What are length and breadth without thickness? A line that you can draw upon paper is more than that."

Three is the number of Persons in the Godhead, —of the divine fullness, therefore,—and until we reach this, God is not fully manifested. It is evidently the number of actualization, realization, manifestation. It is the number of the Spirit, who realizes in the creature the counsels of God.

"When the deep lay over the waste and desolate earth, the Spirit of God brooded upon the face of the waters. When men are born again to God, the gospel comes to them, not in word only, but in power, and in the Holy Ghost. What is sanctification—the work of the Spirit—but that in which salvation is realized in the soul? Without the work of the Spirit, there is nothing but outside work:

'that which is born of the Spirit is spirit;' this is that third dimension which every saint has."

Beautifully, therefore,—one of those deep harmonies of Scripture which, lying everywhere under the surface, give such full attestation of its truth,—the sanctuary in Israel, God's dwelling-place among them, was a *cube*,—of ten cubits in the tabernacle, twenty in the temple; while the new Jerusalem, the final city of God, which the glory of God lightens, is a cube also: "the length and the breadth and the height of it are equal." Here all the counsels of God have realized themselves at last. Here the holiness long sought for from man is at last attained.

In the sanctuary God manifests Himself. Resurrection too, always connected in Scripture with the third day, is that in which, when all mere human hope is at an end, God manifests Himself. Christ was "declared to be the Son of God with power, according to the Spirit of holiness, by resurrection of the dead." (Rom. i. 4, *R.V.*)

Revival, restoration, recovery, connect themselves with this; and all this man's sanctification is. It is his resurrection out of that state of spiritual death in which naturally men are. Once again, let us note, how perfect are these harmonies! and how they attest the truth of that in which they are found!

The underlying thought in sanctification is, *a separation to;* and so even Christ, going back to the

Father, but as Man to take a new position for men with God, says, "And for their sakes I sanctify Myself, that they also may be sanctified by the truth." So were the priests of old sanctified or set apart to the work of the priesthood. And this thought of setting apart to some special office we shall find most important in the application of this number to natural things. For the present, we are confining ourselves to Scripture, as that in which these numbers first find voice; we are learning the language of that which is then to be our interpreter in another sphere.

Four.

We come now to 4, a number in which we find the first that is capable of true *division.* It is a number, therefore, which naturally suggests *passivity* and *weakness;* and as we have now got beyond the numbers which speak of Deity, we naturally connect this with the thought of the creature,—the material which submits itself to the divine hand, and may (alas!) to another. Notice, again, that it is 2, the first number which divides, that divides it; and here we have seen what speaks often of the enemy's work.

Scripture justifies this application fully. *Four* is recognized in Scripture as the world-number,—that of the "four corners" of the earth, of *earthly* completeness and universality, which has thus on it,

however, the stamp of weakness, whatever man may boast. It is the number of the four winds of heaven, the various and opposing influences which show the divided, diverse conditions to which the earth is subject, and which make it the place of such various *experience*, and practical *testing* for man. And this, too, opens the way once more to the thought of *failure*. The fourth book of Moses—Numbers, as the history of Israel's journey through the wilderness, type of our own world-warfare and pilgrimage, illustrates all these thoughts.

We shall find this number stamped upon nature in her four kingdoms, which a science based upon what is wholly material would reduce to three, thus taking away man's birthright, and sending him out, Nebuchadnezzarlike, among the beasts. But this in him was madness, and under divine judgment,—thank God, temporary also: Scripture and nature both, if they are listened to, will restore him to his place.

Five.

The next two numbers have more difficulty. Let us pause briefly to connect what we have ascertained as to the whole series, and to gather what hints we may as to what yet remains.

We have seen that the whole number is 7, the number of perfection; and that this number is composed of 4 and 3. These numbers also have

been investigated, and their meaning read, if it be but partially. *Four* we have seen to be the number of the world, or of the creature, the first three numbers those which speak of God. It is striking here that in Scripture 4 is often thus divided in its peculiar way, and not by mere arithmetical rules, as 3 and 1. Take the four gospels as an example, where the first three have been called, from their accordant view, the "synoptic" gospels, while John's, in its many marked peculiarities, stands in a division apart. It is the divine nature of Christ upon which he characteristically dwells, as is evident, and this dominates and differentiates the whole book.

But this 3 and 1 have again their meaning, and, as combining in 4, speak of *the creature as manifesting* (3) *the Creator* (1). And this is evidently what —at least according to Scripture—creation does. This the numbers as a whole suggest. The $4 + 3$ which make up 7 we have already interpreted almost similarly. What is, in fact, the difference? If these meanings and distinctions of meaning be indeed of God, they will sustain the fullest investigation, and be helped by it: what difference, then, do these numbers naturally suggest? Is it not this, that in the one case (as $3 + 1 = 4$) the manifestation of God is *in* the creature; while in $4 + 3$, the fuller numbers, and the way in which they appear

side by side, suggest the whole relationship of God *to* the creature as that which manifests Him?*

At any rate, it seems evident, from this division of the whole series into 4 and 3, that we are now to take this 4 as a whole number—that of the creature, to which, to make up the last three, we are to *add* once more the divine ones. *Five* will be thus a $4 + 1$; 6, a $4 + 2$; and 7, what we have seen it to be. Nature, as we have seen also, in the last case justifies this thought: what will it do as to the preceding numbers?

Now the most familiar 5 that occurs to me is found in the human hand. How striking, then, to find, at the first glance here, the division into 4 and 1! Look narrowly,—the more narrowly the better. These four fingers, how clearly in themselves they imply weakness! Think what these fingers would be without the thumb! And then this opposing thumb itself, strong and single, as if it would represent the help of the One God ministered to the weakness of His creatures,—may it not remind us that this human capacity of which the hand speaks is just weakness itself except the power of God go with it? Are these things mere imaginings, morbid

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*This view is only suggested as a deduction from the numbers themselves. The testing of it by Scripture involves more research than I have yet been able to give; and only the confidence gained from an acquaintance of years with this method and its results could embolden me to offer it.

broodings of the theological mind? Why, then, do they seem so singularly to unite together? Why are the dreams so consistent?

But the measure of capacity is the measure of responsibility, and here the 4 + 1 once more speak of the creature in relation to the Creator,—of the government of God as approached from the creature-side. "And the throne of God thus approached is encompassed with clouds and darkness. The divine ways with him give him constant and needed exercise, though the throne is there, steadfast and towering above the clouds. *Five* will be found [in Scripture] constantly associated with this thought of *exercise under responsibility;* but also with the kindred one that, under God, the way, according to its character, leads to a corresponding end. This whole lesson Deuteronomy, the fifth book of Scripture, enforces throughout."

Thus far, then, the meaning which has been suggested as to these last three numbers is confirmed by the present one: "the creature in relation to the almighty Creator" seems its fundamental thought.

Six.

Six is another number which seems to speak of relation to God, but a very different relation. It is the number of the days of man's *work-day week*, the appointed term of his labor, type of his life-labor,

his "few and evil days," limited because of sin. It is the second number which is not a prime. Divided as 4 and 2, it is the creature in relation to him who has wrought in it disaster and ruin, but on the other hand to Him who is the Deliverer from it. Thus it is the number which shows the creature as a *fallen* creature, and God's victory over the evil, by which He is gloriously displayed.

In its use in Scripture it implies sin in its full development, limited and controlled by God, who thus glorifies Himself in the issue of it. The number of the beast in Revelation is a striking and well-known instance of the use of this number, 666, —evil in fullest activity, yet its feebleness ever apparent, and God's hand imposing its limit. Its number is the number of its *name*—stamps it, that is, as what it is, and is only "the number of a man," though vainly and impiously aspiring to be as God.

In the field which we propose to traverse, we shall find little of this number; and that, I think, for obvious reasons, which only confirm the meaning of it; but on that account it need be the less dwelt on now. Here, then, our brief glance at the numbers ends; for of 7 all is probably said that need be. We have therefore now our vocabulary ready, which is to be employed in the translation of language still more hidden. Nature keeps well her secrets, and yet keeps them after all to reward the

diligent: as the wise man says, "It is the glory of God to conceal a thing, but the honor of kings to search out a matter." (Prov. xxv. 2.) And "through wisdom is a house builded, and by understanding it is established; and by knowledge shall the chambers be filled with all precious and pleasant riches." (Chap. xxiv. 3, 4.)

CHAPTER VI.

Tones and Undertones.

WE now proceed directly to the interpretation of nature in the light of Scripture. And here the first question must be, as to the light itself: is it truly this? Does Nature, read by Scripture, speak as Scripture does? Are these two witnesses accordant?

We have not undertaken to verify Scripture according to the ordinary methods. We assume for the present also that what ordinary evangelical orthodoxy holds for truth is in its main features a fair representation of the doctrine of the Bible. We are entitled to do this, because what we propose is (though much more than this,) a method of verification. We are going, not to *argue* about the light, but to *use* it. It is wonderful how little argument of this kind there is in the Bible, and how much more convincing and universal is its appeal to men on that account.

If *numbers* are being made to appear as "powers of the cosmos,"—and if all the higher laws of nature are more and more finding numerical expression,—then it is natural to seek here in an especial way the

mind in Nature, mathematics bearing so strongly the impress of *mind*. And if the laws of harmony are clearly pervaded by mathematics, and the diapason actually govern in turn the numerical system of the Bible, then here we should appear to have found the most hopeful direction for discovery of the kind we are seeking. Moreover, we have made at least one discovery, that would seem a most encouraging one, that in its primary division the Scripture-series is one with the harmonic. May we not trust, then, to find it even wholly so, and by this door to reach an assured and open road to the region we desire so earnestly to examine?

The division of the 7 into 4 and 3 has done more than discover to us the harmony thus far between Nature and Scripture. It enables us to give every note of the series its numerical place, in which F stands, therefore, as the *first*, and E as the final note. Without this, we could not proceed a step; and the help given by this discovery is thus indeed a great one.

But what of the black notes upon the board? Have they, it may be asked, no title to be reckoned? If all this is to have voice, ought not they also to be heard? or will it not be caprice to listen to some witnesses and to reject others whose testimony, if but negative, must be of very great importance? The black notes are, of course, semitones,—the

notes half way between those on either side, and which are sharp in reference to those which precede, and flat in regard to those which follow them. But thus it is evident that five semitones are to be added to the original seven notes in order to get the full compass of the diapason. Here, then, it seems as if we must first ask ourselves, what is meant by this new enumeration? Has it any meaning that we can discover? And is it in contradiction to what we seemed just now to have reached? or may it still by any possibility be consistent with it?

It is encouraging indeed to have to answer, It is even *more* than consistent with it,—it is confirmatory of the meaning before gathered from the septenary arrangement and its division, and endows it only with fuller meaning!

As for the septenary notation, let the key-board speak. Its presence there attests its practical reality and value to the musician. Its correspondence with Scripture gives it twofold witness. Why, then, the 12, which has also reality, and should, one would say, have meaning, no less than the other?

Now in taking this, for settlement, to Scripture, we shall make this new discovery, that 7 and 12 are numbers, according to it, most intimately allied. 12, wherever it is found as a series in Scripture, is found, perhaps without exception, to be divided into 4 *times* 3, as 7 is into 4 *and* 3. The factors are the

same, although differently combined. As I have elsewhere said of it, "It is only in the *relation* of the two numbers to one another that it differs from 7: the number of the world and that of divine manifestation characterize it; but these are not side by side merely. It is God manifesting Himself in [relation to] the world of His creation, as 7 is, but now in active energy laying hold of and transforming it. Thus 12 is the number of *manifest* sovereignty, as it was exercised in Israel by the Lord in the midst of them, or as it will be exercised in the world to come."

Turn now to the complete rest of the people of God,—to that new Jerusalem which has the glory of God, whose light God is, and the Lamb the lamp of it; to which the Lord God Almighty and the Lamb are the temple. Here perfection and rest are found if any where, the thought connected, as is abundantly plain, with 7: yet what do we find? Look at the foundations of the city: they are *twelve* in number. Look at the gates: there are *twelve* gates. Measure the city: its length and breadth and height are equal,—twelve thousand furlongs each. Measure the height of the wall: a hundred and forty-four cubits—12×12. Behold the tree of life, planted by the river that issues from the throne of God: it bears twelve manner of fruits, and yields its fruit every month. Everywhere this number 12 meets us

where we might expect the 7. It has the factors of 7: it is. as it were, the expansion of the 7; and the spiritual idea which shines through it, that God is everywhere the manifest Ruler, what does it speak of to our hearts but complete subjection to Him, the perfection of the creature, and its rest?

Thus the 12 is indeed the expanded 7; and the musical scale, as interpreted by Scripture, is in its every aspect, as in its internal meaning, really one.

We may go on, then, with increased confidence, to that for which it will be indeed taxed to the utmost: *not* because of scanty results accruing from our search, but rather from the contrary. The new language we are learning will seem to lead into such quaint lore from Nature's library that we shall be tempted to think we are dreaming, or in the hallucination of disease: we shall need to probe ourselves with sharp inquiry, to see if we are awake, and to examine our road, to see if it be on solid earth, or marsh. Yet what is more certain than that the numbers of which we speak are really in nature? and what more simple than to gage the value of each by what we find in Scripture, free as it must be from all suspicion of bribed witness? Then, if, after all, they tell a consistent story, why should we refuse it, even though it should speak more theologically than for some reason we have concluded it to have the right to speak?

We come, then, in the next place, to consider the *keys*. They are of three kinds—sharps or flats mainly, with one natural key, which, save as accidentals, has neither sharps nor flats. The sharp keys raise certain notes regularly half a tone; the flats, on the other hand, lower them half a tone. The one represent, therefore, a forward and upward tendency; the other, a downward and backward one. The natural key represents neither the one nor the other, but a condition of rest between the two. Every key, moreover, has its special key-note, the fundamental one, to which all its melodies conduct, and where they rest at last. What, then, is the key-note of the natural key, the equilibrial anthem, the motion which is repose? It is C of the musical scale, 5 of the numerical series. And to what does this answer scripturally? We have only to compare our table. The fundamental thought connected with 5 is "the creature in relation to the Creator," or what is signified by the prophetical name of Him who, to fulfill it, was called "Jesus"—"Emmanuel," "God with us."

This is the central note of the musical scale—the rest-note, one may say, of the whole. From this the sharp keys stretch upward, the flats measure downward. *Could* any thing be more appropriate, more beautiful, than this, if the whole of the scale had been planned by some fanatic spiritualist, eager

to press the universe into the service of the gospel? Find me, in the range of this numerical series, any number that shall be so justly the centre and meeting-place of all spiritual harmonies as this, in which God and man meet together, and the "Father of eternity" is a "child born" whose name is "The Mighty God"?

Here God is God indeed, and man is only rightly man. Each is in his place,—man in the weakness which so claims God, and God in the almightiness which can meet creature-need with unexhausted fullness. It is no wonder, then, that a *fifth* should be both the measure of the steps by which the sharp keys rise from the central note, and the measure also by which the flat keys descend from it. But what, then, do these movements represeut? As God and man are both together at the centre, it seems as if God's action might be represented in the one of the two, man's action in the other. And this action backward as well as downward seems well fitted to be man's as that upward and forward is of God.

But they have met in the centre: are they, then, now separating from one another? God forbid! all here is order, not disorder,—harmony, not discord. The keys *stretch*, but do not *separate*, from the centre: they remain ever in perfect relation to it. It is in this, we may say, they have their root, even

as where God and man are *not* together we can have no music. And in the gospel God has shown us how possible it is to meet Him, and find Him for us, when as yet we realize nothing but ungodliness and impotence: "When we were yet without strength, in due time Christ died for the ungodly;" and "to him that worketh not, but believeth on Him that justifieth the ungodly, his faith is counted for righteousness."

From this point there is yet, therefore, progress, upward and downward,—upward, for the purpose of God is man's exaltation; downward, for "he that *humbleth* himself shall be exalted." Thus both these series, the upward and the downward, may have reference to man; and yet the upward speak none the less of divine action: for God alone can exalt, and it is in His dealings with His creatures that He glorifies Himself. Each step of progress in both directions is marked by this number 5, for the central thought is thus sustained all through. Throughout, God and man are still together; and throughout, each still keeps his place. It is the only possible way of blessing that this should be so.

Let us follow the descending series first. Here, in the flat keys, we have really but one series of numbers, while in the sharps we have a *double* series. The reason is, that in the flats, the key-note always coincides with the flat added the previous time. We

have thus but a single series of notes or numbers, which, if the suggestion above be right, we must interpret throughout as relating to man and not to God. Let us put them as a series, applying our key, as we best may. We have, then,—

The key of one flat,	F	(1)	"integrity."
two flats,	B	(4)	"weakness."
three "	E	(7)	"rest in perfection."
four "	A	(3)	"sanctification."
five "	D	(6)	"victory over evil."
six "	G	(2)	"service."
seven"	C	(5)	"reward."

We close with the seventh key because of the number itself, as we know it, and because we have gone through, thus, all the numbers. The final key certainly yields a very appropriate number for the end of the series,—a somewhat remarkable series, even at first sight, although it may not seem to present the regular "pilgrim's progress," which we might suppose it would. I believe a close comparison with the stages of the divine work in the first chapter of Genesis, type as it is of that in the individual soul, would develop a very striking correspondence, which it would require, however, many pages to bring out. A main difficulty is, that with the great diversity of experiences among Christians of which we must be conscious, there is so little agreement as to the order of attainment and the meaning of most important terms. What, for in-

stance, is "sanctification"? How differently do sincere Christians write and speak of this! I shall make, therefore, but few and brief remarks upon what is before us.

As the basis of all Christian experience, we must have come to God in Christ,—a thing already indicated for us, as we have seen, in the key-note of the natural scale, the point of departure for the whole series. We meet Him with no consciousness but that of sin, are justified as ungodly; not as having worked for it, but receiving it as grace, through faith. Thus brought to God, the grace we have realized to be in Him operates to divorce us from sin, and to beget in us the guileless spirit which according to the Psalmist accompanies forgiveness. (Ps. xxxii. 2.) There is, for the first time in any true sense,—

INTEGRITY

before God. "Now to be Thine, yea, Thine alone," is the longing desire of the heart; and this is plainly the first necessity for growth. A "double-minded man" lacks every condition for progress, plainly.

But with the heart thus right, the desire and intention of obedience implanted in it, there will be naturally at first no proper consciousness of the impotence in us which may accompany a right will. The apprehension of—

WEAKNESS

has to be, as the apostle shows us it is, the condition of strength. The path of progress is here a steep descent into the valley of humiliation. "No confidence in the flesh" has to be learnt, and that all *self*-confidence, even in the Christian, *is* confidence in the flesh. Holiness is not to be attained by self-occupation, nor the power of the Spirit of God found for self-complacency and Pharisaism. Here the scriptural remedy is most simple, yet too little known,—the cross of Christ, as the judgment of all that we are in nature and practice, so that we can turn away from ourselves to Him who is before God for us, and in whom we are, "accepted in the Beloved." In Christ we can see ourselves without the least stain or touch of sin, we can be occupied with ourselves without self-occupation; "*in Christ*," thus, we can realize that "old things are passed away, and all things are become new," and—

REST IN PERFECTION

outside ourselves, yet ours. Nothing will, nothing ought to, satisfy us but perfection. To find it in ourselves would be to lose it; to find it in Christ is to find it available for all our need, but leaving us to glory in Him only. "We are the circumcision, who worship God in the spirit, and *glory in Christ Jesus*, and *have no confidence in the flesh.*"

The result is, practical—

SANCTIFICATION,

for Christ is "made of God to us sanctification." "We all with open face beholding the glory of the Lord, are changed into the same image from glory to glory, even as by the Lord the Spirit." A heart upon a heavenly object means, of necessity a heart outside the world. He who could say, "To me, to live is holiness" would leave out Christ. He who can with the apostle say, "To me, to live is Christ" will of necessity be holy.

How simple, how blessed, then, is God's way of sanctification! But it is the way too of all success. How mighty in prayer will he be to whom to live is Christ! How quiet and assured may he be as to

VICTORY OVER EVIL

who is thus linked in heart with Christ!

> "He always wins who sides with God;
> To him no chance is lost:
> God's will is sweetest to him when
> It triumphs at his cost."

Christ's banner never floated yet in an unconquered field.

Thus far, then, there has been in this series a real and connected progress of thought. We have had no difficulty in tracing it; and it seems already to be in some sense complete. Yet the two closing members of it could hardly be omitted without loss, and they come in with undeniable fitness where

they do. Who would leave out of this catalogue of blessing, brief though it be,—

SERVICE?

and who can separate it from that which divine love has ordained to follow it,—

REWARD?

Thus our pilgrim has got within the gate. The series is manifestly complete.

What shall we say of it, now that it has ended? Is it any thing more than an ingenious play of fancy? Can we reckon, after all, this theological lesson as among the certainties of science? We neither have the will nor the power to decide this for our readers. That the numbers to be interpreted are there seems evident; that their interpretation is by a table of meanings which have their roots in nature itself seems equally so; that Scripture sustains and verifies these meanings is capable of receiving extended proof.* There we must for the present leave it; but our search in this direction is not yet over: we have still to consider the sharp keys.

Here we have a movement upward and forward, with halts at the same intervals of a fifth as before, by which the 5 which is our starting-point is carried continuously with us. Here the key-note lies next beyond the added sharp; so that we have a *double*

* See "The Numerical Bible," *passim.*

series, of sharps and key-notes, to consider. Let us construct our table.

SHARPS.	KEY-NOTE.
1 " F (1) The Father;	G (2) Christ.
2 " C (5) Divine governm't;	D (6) Victory over evil.
3 " G (2) Christ;	A (3) Sanctification (by blood and Spirit).
4 " D (6) Conqueror;	E (7) Perfection and rest.
5 " A (3) Holy Spirit;	B (4) Weakness of creature.
6 " E (7) Perfect work;	F (1) Kingdom of the Father.

This table is naturally more complex than the former one. Note that the spiritual movement indicated we have already suggested as one from God to man, and that this governs, therefore, in the interpretation of the numbers. Note also that with the sixth key (which is the last generally recognized in music) we have returned again to the point from which we set out; the cycle is complete: we set out from God and have returned to God again.

Not simply from God either, but from the *Father*. Notice, once more, that our series follows the order of Scripture and of the creeds: the first double pair of numbers speaks of the Father; the second, of the Son; the third, of the Spirit; and the numbers themselves bind us to this,—we have no alternative! Yet WHY should the numbers be as they are? All but one are represented here, and how is it that *every one* turns up in its necessary place to work out this result? If it be chance, how slender a chance

was there of such a thing! the law of probabilities would say, at least, *millions to one* against it.

But this is not all. Among these seven numbers, six of which have found their place, there is just *one* which, if it had come in in the first row, would have spoiled all. This is 4, the number of the creature, and which in a movement from God to man would have been in this place an absolute negation of such meaning. It should not therefore appear, and it is the *only* number which should not. It should not, and *it does not.* Is all this still chance? Add all that we have seen before. Surely all sober reasoning is against the thought of any possible delusion in following these things to their full result.

In any movement from God to man, we begin, then, scripturally and necessarily, with the—

FATHER.

"To us," says the apostle, "there is but one God, the Father, of whom are all things." And in His counsel toward man there is but one word that explains the whole—is the true key-note. Every Christian heart knows it, and it is affirmed here by nature and in song: it is—

CHRIST.

"The Father sent the Son to be the Saviour of the world." Well may this be the first note here: what other could take its place?

In the second pair of numbers we have the first

two repeated, with the creature one prefixed. They are therefore a confirmatory testimony to the same truth,—not, of course, a mere repetition of it. The number 5 speaks, as we have seen, of—

DIVINE GOVERNMENT,

of those governmental ways of which Christ is still the key. And the number which is in relation to this here shows what is the end of it in blessing for us, in that glorious and eternal—

VICTORY OVER EVIL

of which the cross is the great pledge and prelude, and in which God manifests Himself, to the joy and worship of His creatures. Here the end is reached naturally of the first division. The second shows

CHRIST

Himself in the accomplishment of His work in behalf of men. Here it will seem to many, at first sight, that the result of His work would be better expressed in some other way than as—

SANCTIFICATION,

which they are accustomed to ascribe definitively to the Spirit. Scripture, however, is larger in its thought than this. Thus in Hebrews, for instance, we find sanctification by the blood of Christ, or "through the offering of the body of Jesus once for all," the blood "perfecting forever them that are sanctified." Thus we have "the heart sprinkled

from an evil conscience," and are enabled to draw near to God in "full assurance of faith."

Again, Christ is "made of God unto us sanctification," having "sanctified Himself"—set Himself apart in the place He has assumed for us in heaven—that we also might be "sanctified through the truth." Thus as an Object for our hearts in heaven He draws the hearts of His people from the earth, and gives them what is true power for holiness in "the joy of the Lord."

Thirdly, He is also the giver of the Holy Spirit, who takes of the things that are Christ's to show them to us. Perhaps no one word, then, would convey the fullness of His work for us so well as that of "sanctification."

But again, the number 6 recalls us to the thought of Him as—

CONQUEROR.

He is to come again, and to have all things put under His feet. By His blood He reconciles all things that are in heaven or on earth; and when He takes the throne at last, it is to subdue all to God. "Then cometh the end, when He shall have delivered up the kingdom to God, even the Father; when He shall have put down all rule, and all authority and power: for He must reign till He have put all enemies under His feet." And then what? Why,—

PERFECTION AND REST.

"And when all things shall be subdued under Him, then shall the Son Himself also be subject unto Him that put all things under Him, that God may be all in all." Here, therefore, the second series within the series comes to an end.

The third begins with the number of the—

HOLY SPIRIT,

which, however, is connected with one which may at first seem to be little in place. It is the number which speaks of the—

WEAKNESS OF THE CREATURE.

We expect, rather, perhaps, something that speaks of strength or fruitfulness; but here, indeed, when we are made thoroughly conscious of it, is the secret of both. The creature leaving its creature-place, seeking to be as God, fell into ruin. The way back is simply to take humbly, in true repentance toward God, the creature-place. "Out of of weakness" are we "made strong." Self-abased, we can be exalted. A whole book of Scripture gives us the story of a "perfect" man, who learns by most painful discipline, and now with his eyes seeing God, to "abhor himself, and repent in dust and ashes." Then, as in a moment, he is lifted up out of the dust, and blest. How simple is the lesson! how strange the difficulty of learning it! Once *be* but His creature, God will be your God:

to one with his body now dead is made the revelation of the almighty God, and to "walk before" Him is to "be perfect."

Thus now we have the number which speaks of this; the—

PERFECT WORK

of the Spirit in us being that, which, when all things are indeed subdued, ends, as we have seen, in the

KINGDOM OF THE FATHER,

where the subjects are all children, obedience but a deep delight, and the eternal *day* is sanctified in the Sabbath-rest of the children of God.

Here, then, we have reached the end of these harmonic series,—as far, at least, as I am able to interpret them. Better theology I know not,—more concise simple teaching of it I have yet to find. Strange indeed it is, no doubt, to find it here; but once again we are reminded of what has passed into a proverb, that "truth is stranger than fiction." Strange as it is, though, there is nothing about it uncouth, fantastic, or bizarre. It is but a natural type read by Scripture; and why should not Nature have her types thus, waiting Scripture-exposition? Is there any thing much stranger in it than that the things that "happened unto Israel" should have "*happened* unto them for types"?

The real question lurking in our minds is, I doubt not, one akin to what was once plainly put by those

who saw the box of ointment broken above their Master's head. It would be, "*Cui bono?*" "To what purpose is this waste?" Why should theology be hid in music? and hid so securely that it should take nineteen centuries to bring it out?

Well, if it be there, let us take the shame of not having found it: what has barred the way to our possession of these things, but little diligence to explore God's Word—little belief of what was there for us? The knowledge needed to explore it is not very deep,—the skill to bring it out not any thing wonderful. No: we have simply never looked for it; and "he that seeketh findeth."

Well; but still, *cui bono?* Why should it not be enough to find theology in Scripture? why should we think of it or find it in the laws of harmony? Well, why should Israel's history teach us what we know without it? Perhaps, after all, because we would not thus know it so well. Perhaps because, if even man will not hear, God will accumulate His testimonies, and heaven and earth be made to witness against him. Perhaps because His delight in Christ is such that He must everywhere express it. Perhaps to tell us where lies the soul of all true harmony, and that with Him alone are the pleasures which are at His right hand for evermore.

For us now also it may testify that the "crystals" of theology will neither be "washed away" nor

"changed" by the inlet into it of the "flood" of science. This thought is only the result of the waters not being yet sufficiently settled to discern rightly what is going on. The sciences, in the unwisdom of their babyhood, may strive, no doubt, to extinguish the theologians; but before they are half-grown, they will be sitting at their feet. At their Master's feet, at least, all Nature sits in the hush of worship.

CHAPTER VII.

The Kingdoms of Nature.

WE have as yet, however, not entered upon the field of science proper. We are about to do so, and to inquire what help may be gained from Scripture for the detailed study of nature. In this numerical system, of which both Scripture and nature are immensely fuller than has been thought, we ought to find a wonderful help, if it be (as we have essayed to show,) the *same* system that pervades both. Of this too, all future applications will be a continual test. Thus every real discovery will be verified as it is made, in complete accordance with the not unreasonable demand of Mr. Huxley. Nay, it may be justly doubted whether he can produce, for a large number of what he accepts as scientific verities, any verification so complete. That it comes to him from Scripture *ought* not to prejudice it in his eyes; nor can the refusal of it for this reason be justified in the least degree under the warrant of science.

And out of how many sloughs is he saved at once who can accept Scripture as the interpreter of

nature! What light is poured in there where the mere naturalist has to own that there is none; and how this heavenly ray irradiates all nature! How grand a thing for the man of science to be able to stand at the beginning of things with God, and to see, if it be "through a glass darkly," the birth of all that exists around us! What a new and vast field of research opens before him in Scripture itself, so little explored in this way as it has been, even to the present time: a field in which induction is as fully in place as any where, and where microscope and telescope will open up new worlds, as in nature! Standing, as I do, but at the threshold of all this, or given to enter but a little way, I dare predict to him who shall bring together, as in a stereoscopic picture, the two worlds of Science and of Scripture into the unity which they really have, that he shall achieve for himself a triumph and a joy beyond utterance. For me even to lisp but a few things is yet much; and I do it in the hope that others with better knowledge will utter them plainly.

A general view of nature is in some sense the easiest to accomplish; just because broad features are more easily read than minute ones. And my hope is in this chapter to look at the kingdoms of nature, and to define them, or rather to show how Scripture defines them; a work which may seem

quite superfluous. But it is important to begin at the beginning; and if some have no need, we believe there is need for many.

Classification, if it be a true one, must be of the greatest importance in order to knowledge; if false, it must be correspondingly injurious. As putting things in their place, and exhibiting their difference from, and their relation to, one another, a true and all-embracing classification would be indeed, what one has called it, "a summation of knowledge."

Even in the large and general way in which alone we can speak of it here, it is important to know what is the truth. Where, for instance, shall we assign man his place?

"The question of questions for mankind," says Prof. Huxley, "the problem which underlies all others, and is more deeply interesting than any other,—is the ascertainment of the place which man occupies in nature and of his relation to the universe of things."

There are in reality two questions here instead of one; but the second answer he takes evidently, and with some reason, to be involved in the first. And this is shown in his conclusion:—

"The structural differences between Man and the man-like Apes certainly justify our regarding him as constituting a family apart from them; though inasmuch as he differs less from them than they do from other families of the same order, there can be no justification for placing him in a distinct order. . . . . It is as if nature herself

had foreseen the arrogance of man, and with Roman severity had provided that his intellect, by its very triumphs, should call into prominence the slaves, admonishing the conqueror that he is but dust.

"The facts, I believe, cannot be disputed; and if so, the conclusion appears to me to be inevitable.

"But if Man be separated by no greater structural barrier from the brutes than they are from one another—then it seems to follow that if any process of physical causation can be discovered by which the genera and families of ordinary animals have been produced, that process of causation is amply sufficient to account for the origin of man."

And, accordingly, evolution accounts for him. "Man's place in nature" is thus in the order Primates, sub-order, Anthropoidea, and family, Anthropidæ, next above (and not very far off) the apes proper; and this position of his means blood-relationship with the beasts that perish, and the extinction of every hope of immortality that cannot be shared with them.

If the body be all, it is impossible to dissent from these conclusions. But although it be admitted that the body is not all, and that psychical phenomena, as sensation, affection, intelligence, are not the products of organization merely, still it is in dispute as to the real difference in this respect between man and the beast. Even De Quatrefages, who claims on behalf of man (as he says, with continually growing conviction) that he must be referred to a *human*

kingdom, bases this entirely on the ground of his moral and religious faculties. On the other hand, many now see in this respect also no difference save of degree between them. It cannot but be of importance, then, to have the testimony of another witness, and to see what Scripture—and with what grounds in nature—affirms as to this.

Let us recur once more to our numbers, then, and ask ourselves what is the number of nature, or, as Scripture usually prefers to speak, of creation. Here there is not a moment's doubt: the number 4, as we have already seen, is the number of the creature.

We have, of course, no right to say, on this account, that there are four kingdoms in nature, instead of three, as nearly all the world says. We have no right to *predict* in these matters, but only to *interpret*. Yet, if there were four, we should have a right to take it as a new witness of the harmony between nature and the Scripture numbers.

Suppose, for a moment, there were four kingdoms; there could not be a doubt, of course, that to the Animal, Vegetable, and Mineral we must add the Human one.

We should have, then, three *organic* kingdoms and one *in*organic.

But here at once we have another note of harmony. For the Scripture 4 divides commonly into

3 + 1, as we have seen, the numbers speaking of creation as manifesting the Creator. We are entitled to look further, then, with hope.

The *fourth* must stand here for the Mineral kingdom: has it the characteristics of that number? Assuredly, if weakness and passivity characterize this, it has these fully. The inertia of matter is a well-known attribute of it. And from matter, we call that which yields itself up to the hand that fashions it, "*material.*"

These are strange coincidences, if they be no more than that. But are they no more? Let us us examine the organic kingdoms and the numbers attached, and see.

These three organic kingdoms, then, may be seen as *one*, in that they are pervaded by the common principle of *life*, and answer to the number 3, in that they are *organic*. Life is the basis of individuality in nature, as is evident. Every living thing is a unity in such sense as a stone or a rock is not. The rock can be divided, and is not altered, except in size. The living unit may recover itself after division, indeed; but if it cannot do this, dies: it cannot be indifferent to it, as the rock is. Thus the four kingdoms of nature clearly fall into two divisions—the living and the non-living, which, according to the meaning of numbers, stand as 1 and 2. The living, though three, are one.

They are one also in that they are all organic. Yet this organization which characterizes them, while itself one in the harmony of its parts, is more than one in the fact that there *are* parts,—organs,—individual, though harmonious. Life implies activity, and in this way a various activity, a division of labor for the good of the whole. And this we shall find really coming under the number 3, according to the definition already given of that number.

Three is the number of sanctification; and the idea in sanctification is that of setting apart in some special place or to some specific office. When the Lord says, "For their sakes I sanctify Myself" (Jno. xvii. 19), He is speaking of the place He is going to take as Man in heaven. So Jeremiah was sanctified to be the Lord's prophet, and Aaron and his sons to be His priests. All the vessels of the tabernacle and of the temple were thus set apart or sanctified to a special use in connection with the service of God. And here in nature, where all things serve Him, everything filling its place and doing its work, this specializing is but, so to speak, a natural sanctification. We shall find this thought in various modifications under this number, as we investigate the numerical series which are presented to us in nature.

The three organic kingdoms thus far fill their place, then. But we have to go much further. We

have to find the place of each one as tested by the numerals also: where, if the mineral kingdom stands as 4, the human, animal, and vegetable kingdoms stand as respectively 1, 2, 3. Let us begin once more at the lowest, the—

VEGETABLE KINGDOM.

How in this series does the number 3 specifically characterize the vegetable kingdom?

With regard to man and beast, the vegetable kingdom has an indispensable part to fulfill. Ultimately, it has to feed them both. For even the carnivorous animals are sustained by the herbivorous; and did the beasts prey simply upon each other, there would soon be of necessity an end of all. But this place filled by the vegetable depends upon this, that it alone has the power of taking up and transforming the inorganic material into organic upon which alone the higher organisms can subsist. It is the price they pay for their elevation in the scale of being, that they must be more dependent; and this is a constant law of nature.

The vegetable is in this way the great transforming agency in creation,—the producer, as the animal is the consumer. Every naturalist in the world will agree to this definition of it. And yet this, again, clearly lies within the compass of the number 3. The Spirit of God, whose number it is, is thus the Great Producer and the Great Transformer. Spe-

cialization implies transformation. Sanctification, when an inward work, is the same thing. The water, the type of the Spirit, is that which prepares the root for the soil and the soil for the root: without its mediation, no food could be got from the barren ground. Thus the number of its rank in this series fully characterizes the plant in the organic creation: its numerical stamp is completely justified.

Let us pass to the—

ANIMAL KINGDOM,

still with our guide, and see how the more complex nature of the higher being will submit itself to the simplicity of this arithmetical law.

CHAPTER VIII.

Animal and Human.

THE vegetable has life; and life is a mystery entirely beyond us. Nothing has demonstrated this better than all the labor that has been now for a good while bestowed upon it in the opposite interest. That it is known only to proceed from life is now admitted even by those whose every hope for their theory depends on the speculation that in another age of the world, somewhere, somewhen, it may have been different. In our present inquiry, we are happily delivered from the necessity of discussing such things. Scripture still leaves it a mystery, and we must: no less real on that account than the countless mysteries that everywhere surround us.

When we pass from the vegetable to the animal world, however, it is not with life alone that we have to do, but with that which is much more strange to our partial systems of natural science, —the *living* soul.

Here, indeed, theologians often themselves are in confusion, and have not given consistent testimony

to the Scripture-doctrine. They have often made the possession of soul distinctive of man, or, confounding soul and spirit, have ascribed the latter to the beast. They have thus lost, on the one hand or the other, the simple distinguishing marks of the organic kingdoms. According to Scripture, it is nevertheless as clear as need be, that in the vegetable we have life without soul; in the animal, life *and* soul; and in man, life, soul, and *spirit*.

Let us first get clearly hold of the Scripture doctrine.

In the first chapter of Genesis it will be noted that although we ordinarily speak of the six days of *creation*, the term is only used in it in relation to three things. First, "in the beginning God created the heaven and the earth." Secondly, on the fifth day, "God *created* every living soul that moveth. Thirdly, on the sixth day, "God *created* man in His own image."

Now, the meaning usually given to the word "created" has been questioned or denied; but here throughout it seems in contrast with mere *making*, and strictly to apply to the bringing into being of something not developed out of any thing pre-existing. In the beginning, (if strictly that,) there was nothing pre-existing. The "living soul" was an entirely new existence, not a development out of matter or its forces. In man, there is *spirit* as well

as soul: hence again a new existence, and that in the image of God.

Notice, that the living soul is in the thirtieth verse (*margin*) distinctly said to be 'in' "every thing that moveth on the earth;" and that while the functions of nutrition and reproduction are by physiologists styled "vegetative functions," the animal ones are those of sensation and voluntary *motion*. Both are indicated in the "living soul that moveth," with perfect accuracy.

The "soul" in Scripture* is the seat of the emotions, love, hate, pity, longing, lust, appetite, and of the life also of the body. It is the sensitive nature, including in man what we usually call the heart. If "knowledge" is also ascribed to it, we can readily understand this, speaking as we do also of knowledge of the heart: but the seat of true intellect is the *spirit*.

And this in man it is that shows him to be in the image of God. This has by some been referred to his position as His representative on earth, the head over all in it; but this is impossible as the true view, for in that case, he would not have been *created* in it. On the other hand, the parallel expression in the fifth chapter, where Adam is said to have begotten a son "after his image," may well explain the

* *Nephesh* in the Old, *psuche* in the New Testament. In the passage above, and often in our common version, "creature."

thought. We are thus "the offspring of God;" as the apostle quotes to the Athenians. In man there are "spirit, soul, and body" (1 Thess. v. 23), and God is the "Father of spirits" (Heb. xii. 9), Himself "Spirit." How clear this makes the statement in Genesis! Had it said "Father of *souls*," it would have made Him Father of the beasts.

So also is He the "*God* of the spirits of all flesh" (Num. xvi. 22), for the spirit is that alone by which we apprehend God, or (in that sense) have one. It is that by which we "know the things of a man" (1 Cor. ii. 11), and is rendered in our version in several passages "mind" or "understanding," which is plainly its true sense. To the beast it never is ascribed.* "All flesh" is commonly in Scripture limited to man: as where the Spirit is promised to be poured out on all flesh (Acts ii. 17), or all flesh is to see the salvation of God. (Luke iii. 6.)

Thus by "spirit" man is in relationship to God, and thus also to eternity. If there are passages which may seem equivocal as to the soul, and the beasts that have soul are still "beasts that perish," (Ps. xlix. 20,) there is not in the Word of God a shadow upon the immortality of spirit from end

*One passage only can with any plausibility be supposed to do this: Eccl. iii. 21. But it is merely the language of doubt from the standpoint of human knowledge: "who knoweth?" where *ruach* also may mean "breath" or "spirit," according to the context. See my "Facts and Theories as to a Future State," pp. 44-80, for the full argument as to Soul and Spirit.

to end. Nay, man who is in this life characterized as a "living soul," (Gen. ii. 7) as soon as he departs is no more this, but is a "spirit." He still *has* a soul, as "Thou wilt not leave my soul in hell" is proof; but all the more striking is it that soul has ceased to define him: "they thought that they had seen a *spirit;*" "a *spirit* hath not flesh and bones, as ye see Me have." Indeed, our own use of language recognizes the same distinctions; for, while we speak commonly, without the least materialistic meaning, of *souls* perishing by flood or plague, we never think of *spirits* doing so; and the departed man we still call a "ghost" or "spirit"—words equivalent in meaning.

But why, then, this use of the word "soul" for man in this life? which we find, moreover, just where naturally we should expect something else. For, when in Genesis we have seen his very body moulded out of the dust with special care, and then the breath of life inbreathed by God as if He would endow him with something from Himself which should bring him into a relationship with Himself known by no other being upon earth, it does seem disappointing all our expectations, just to say, "And man became"—not a spirit or the offspring of God, but—"a living soul:" after all, only what the beast is!

Look deeper, and the disappointment passes, and

gives place to other feelings. Scripture is only more accurate, more scientific, than we are prepared for. In exact classification every one knows that we have genus and species, and that we have them in this order and distinct. The generic must not be mixed with the specific definition, nor must the specific precede the generic; otherwise we have real confusion, such as Scripture is never guilty of. In these two accounts of man's creation, in the first two chapters of Genesis, we have no confusion, and no meaningless repetition either. In the first, man's generic place is given, in contrast with the animals, where it is needed to distinguish him. *Here* it would not do to speak of him as a "living soul"—that would not distinguish. He is thus spoken of first as in the image of God, *created* in it, thus implying spirit, as we have seen. He belongs, then, to the genus "spirit," as do the angels, as do not the beasts: he belongs to the family of God. The second chapter does not repeat this: it gives his *specific* distinction in this spiritual genus. Here to define him as spirit would not distinguish him: no; his distinction here, as from the angels, is evidently just what is given us,—his specific distinction—that he is a "living soul."

And what, then, does this imply? Is it not plainly that he is a spirit in *disguise?* linked with a lower nature, which, while suited to the animal

merely, to him becomes a yoke, a discipline, a humiliation, just because he is more? What helplessness is like the helplessness of a human babe? How long does it take to put man in possession of those faculties in him that transcend the beast! Nay, more, in those which but equal him with the beast he is painfully deficient. The beast's instincts fit it from the start for the sphere in which it is to move. In man, they drudge but in service to a higher nature, more dependent because it is higher —because in a world like this, built up from the bottom, as the first chapter of Genesis shows it, that which is higher is *dependent upon all that is built up upon.* Thus, as the soul leans upon the body, so the spirit upon the soul. The lowest faculties develop first, just because the others must by their means. The mind furnishes itself through the senses: the tangible, material things must supply the images of the unseen and spiritual: and of this, it is well known, the roots of all language are a perfect witness to us. Man is a spirit, but a spirit in humiliation. "We see through a glass darkly"—"in a riddle," as the last word means,—groping in the twilight before we see; learning by putting together fragments of knowledge, by induction and deduction, by theorizing and verification, the painful labor of it all a constant lesson of lowliness, if we will learn it; if not, a constant witness against our pride.

And is not this the need of it, and the moral justification of it all? If we will still listen to Scripture, it was through pride that Satan fell. (1 Tim. iii. 6.) Created after the angels' fall, by and by to be tempted in the same direction ("Ye shall be as God") and to yield, these limitations and dependences are not a needless humiliation for man, but the true and tender discipline of the "Father of spirits," who, necessarily, and for our profit, chasteneth every son whom He receiveth." Let us not fret under it, nor faint, nor be indifferent. Faith will turn it all to blessing; and faith here alone is reasonable; faith it is that finds verification from every whit of real knowledge.

But this, then, in brief, is man; and thus he is distinguished from the beast. His kingdom is that of spirit, while it is fully allowed that by one side he is related to the beast. Granting this, it is yet only a partial and materialistic classification that can assign him his place in nature with the beast. He is a true microcosm, in whom all the elements of the world in which he is are assimilated into a perfect unity, which sin has indeed obscured, but not destroyed. Life is indeed, as has been already said, the basis of organic unity. Yet in the plant, the individual organism can be divided again and again, and multiplied by division. So in the lowest animals, as notably in the Hydræ, we find soul itself

little jealous of a similar division. In the Zoophytes it is often hard to say what an individual really is; and thus we may suspect even in the higher animals that it is more the complexity of the organism than the nature of the soul that resists division. But in man with spirit we find *personality*, a unity which appears in consciousness, and asserts sovereignty over all the lower nature. Here is at last a being who can say "I," and despite the constant change in his material frame, affirms his own continuous identity. Thus in his sphere, small though it may be, he is truly in the image of God, the unchangeable One,—His offspring.

He is naturally also as a species one, although here some would fain have had it otherwise. In his triune nature, spirit, soul, and body, representing severally the three organic kingdoms, he of necessity conforms as they do, to the numerical law.

But the animal kingdom requires further consideration. What does the number two indicate as to it? As we have already seen, that the soul is characteristic of the animal, it is in the soul that we must find, as it would seem, the number significant. It may not of course be confined to this, but at least here we should expect to find prominent the indications of the number. How, then, does the number two characterize soul?

We have here a subject little explored, and upon

which we can find little direct help from science. But the researches, which have of late been many, into the difference between man and beast, indirectly throw much light upon it.

Take the following from the Duke of Argyle :—

"It is often said we can never really know what unreasoning instinct is, because we can never enter into an animal mind, and see what is working there. Men are so apt to be arrogant in philosophy, that it seems almost wrong to deprecate even any semblance of the consciousness of ignorance. But it were much to be desired that the modesty of philosophers would come in the right place. I hold that we can know, and can almost thoroughly understand, the instincts of the lower animals; and this, for the best of all reasons, that we ourselves are animals, whatever more;—having, to a large extent, precisely the same instincts, with the additional power of looking down upon ourselves in this capacity from a higher elevation to which we can ascend at will. . . . . In contemplating the phenomena of reasoning and of conscious deliberation, it really seems as if it were impossible to sever it from the idea of a double personality. Tennyson's poem of the 'Two Voices' is no poetic exaggeration of the duality of which we are conscious when we attend to the mental operations of our own most complex nature. It is as if there were within us one Being always receptive of suggestions, and always responding in the form of impulse—and another Being capable of passing these suggestions in review before it, and of allowing or disallowing the impulses to which they give rise. There is a profound difference between crea-

tures in which one only of these voices speaks, and Man, whose ears are, as it were, open to them both. The things which we do in obedience to the lower and simpler voice are indeed many, various, and full of a true and wonderful significance. But the things which we do, and the affections which we cherish, in obedience to the higher voice, have a rank, a meaning, and a scope which is all their own. There is no indication in the lower animals of this double personality. There is no indication that they hear any voice but one; and there is every indication that in obeying it the whole law of their being is perfectly fulfilled. This it is which gives such restfulness to Nature, whose abodes are indeed what Wordsworth calls them—

'Abodes where Self-disturbance hath no part.'"

This impulsive, instinctive life is evidently what according to what we have seen, the mere soul-life of the beast is,—in a relation of dependence to a Mind whose will it expresses, but of which it is unconscious, and which is not its own. Now, this is what the number two expresses, as has been already said; and what makes them fit to be the servants of man, under whom they were originally placed, and who may be to them thus, in such measure as he practically fills the place allotted to him of God, the mind they lack. Abdicate the place too he may, and then those that should have been his servants only, become his enemies, and this is what, since the fall, we experience in varying measure, though still enough evidence remains of what originally God designed.

This is from one side what the beast is; from another, he is the consumer of what the plant manufactures, the balance-wheel against over-production: and this too is very fully accordant with his numerical place. As the chemist puts it, he is the oxidizer, as the plant is the reducer, and between them the interplay of the vital forces is maintained.

Even in his body—and so in man's, which is still animal,—there is found, as I think, the stamp of his number, in that *bilaterality* which everywhere seems (in contrast with the plant) the stamp of the animal. As Prof. Clark has said :—

"*All* animals are *double*, even man . . . . bilaterality is the *basis* upon which the animal structure is erected; and whatever modification there may be in this feature, this *type* of *form*, such a modification is subordinate to the *type*."

Thus it is not a feature of secondary importance that is marked by this number, but one of fundamental importance.

Has it to do with that voluntary movement which is part of the definition of the animal in the first chapter of Genesis, "the living soul that *moveth*"? In the higher orders, as the Articulates and Vertebrates, one might easily imagine so, even the brain (which is double) being largely occupied with the control of movement, as Ferrier and others since have fully shown. This is but a suggestion, though

a reason for this peculiarity of structure there must be; and this, if it could be shown, would complete the harmony in this respect between nature and Scripture. At any rate, the living soul fills its place.

CHAPTER IX.

Classification.

TO touch the subject of classification even, one must be very bold, very ignorant, or—and I would rather have this considered to be my own case—very confident in his guide. It will be seen, in fact, that I have already touched it, and that my readers have some right to assert that the principles that have been announced ought, if true, to carry one further. If nature have, to the extent affirmed already in these pages, a numerical structure, then is it at all likely that this should be but so partial a truth? Must not the smaller divisions, as well as the larger, if once they are ascertained, be characterized by these significant numbers? Nay, would it not seem that their first service to us here, if, as is plain, they are meant to do us service, will be to verify true classification?

Certainly this seems a first necessity in order to find what deeper meaning than we have yet realized lies hid in nature. We must have some arrangement of the multifarious objects she presents to us which will save us the impossible toil of accumulating in our minds the tens of thousands of points of

detail,—of resemblance and of contrast,—which distract and bewilder us, if without a clue we attempt to penetrate what is yet, even to the most devoted students of it, so much a wilderness of facts and hypotheses.

Classification, if it be a true one, is the putting things in their places, defining their relationship to one another and to the general plan; and that plan —if there be one—must be God's plan, the expression of the divine mind in nature, the lesson He has set for us to learn, however poorly or imperfectly we may in fact learn it. Classification is in this sense of transcendent importance; and I trust, the thought of this may plead for me, if I offer but some scattered and feeble suggestions as to it, which, if they be little enlightening, may yet help another perhaps to find the light.

Surely, the thing that becomes us, as those in our Father's image, is to expect to find everywhere in what He has made the impress of its Maker, His own manifestation to the minds of those who seek Him in it. And (it may be again said) if He have forbidden to us idle words, there will be in all this no idle word. Serious, yet blessed meaning will face us everywhere; and to look for this is to find it, if only we look reverently, as those that value what they search for. Here the law holds good,—"*every one* that seeketh findeth." Encour-

aged thus by the Word of God itself, we may go on.

Classifications are numerous enough, but in looking round among them one can find few indeed that claim for themselves any principle of construction which can give us the least hope of such a clue to the divine plan as we are seeking. The meaning that Darwinism seeks has no purpose in it, therefore no intelligence; and the systems devised in this interest have as their only end, to discover the genealogical tree of life, which, whether it has its root in chance or necessity, was never watered by the river of God, and bears no fruit but Dead Sea apples. Nor in general has any divine plan been seriously thought of. There is, however, an exception to this; and, *if* "he that seeketh findeth," we may hope to have here at least a beginning of truth. Strange to say, the first outline of it was struck out nearly at the same time by two men entirely apart from one another, the Wallace and Darwin, let us hope, of a better day beginning, and for which we would be glad to believe in the "survival of the fittest." That its discoverers have passed away, and the system itself has, after awakening some attention for awhile, died also, need not forbid hope, for many a truth discovered has had ordained for it such a death, and yet in due time resurrection; and it may be so with this.

The system has for us also this additional attrac-

tion, that it is a *numerical* one. Thus our hope brightens, especially as it purports to be not a hypothesis, but a discovery,—a report of what those versed in certain branches of natural history had observed in their respective departments; not a theory of what should be there, but of what (according to their belief) *was* there.

The first of these discoverers had given himself to the special study of insects, and the volume which contained his first rough sketches was called *Horæ Entomologicæ*. But Mr. McLeay's system was taken up, and in some sense remodeled, by a well-known man, and author of a book in which it was elaborated and applied especially to Ornithology—the "Fauna Boreali-Americana." From a later and smaller book, the "Geography and Classification of Animals," published in 1835, I take the outlines of the completed system.

The first principle of Mr. McLeay's system is, that every *natural* series or group of animals is *circular*;—

"So that, upon commencing at any given point, and thence tracing all the modifications of structure, we shall be imperceptibly led, after passing through numerous forms, again to the point from which we started."

The second principle is, that the divisions of every group, where any exist, are *five* in number.

To which Mr. Swainson adds, that the primary

circular divisions of every natural group are *three actually*, and five *apparently*. He calls these three, the typical, subtypical, and aberrant groups; and adds—

"The difference of considering a natural group as divisible into three instead of five, does not in the least affect the natural series by which they are united. The discovery of the union of Mr. McLeay's three aberrant groups into a circle of their own, is the addition only of a property superadded to that which they were known to possess; this property consisting of uniting into a circle among themselves, as well as passing into the typical and subtypical groups."

The third principle is this,—

"That the contents of every circular group are symbolically or analogically represented by the contents of every other circle in the animal kingdom."

And the fourth principle, which seems really involved in the last, although it was first stated explicitly by Mr. Swainson, is—

"That the primary divisions of every circular group are characterized by definite peculiarities of form, structure, and economy; which, under diversified modifications, may be traced throughout the animal kingdom; and are therefore to be regarded as the *primary types of nature*."

This is the completed system, certainly remarkable for its simplicity and symmetry at any rate, while its requirements are sufficiently great to make

it impossible, if they can be met in practice, for the system which can meet them to be other than the truth. We shall return to this directly.

The second discoverer of this numerical system was Elias Fries, a distinguished botanist, who in his *Systema Mycologicum* applied it to—

"The full investigation of the whole class of *Fungi*," says Mr. Swainson, "through all its minor groups or subdivisions." "It is very remarkable that this consummate botanist, totally ignorant of the previous publication of the *Horæ Entomologicæ*, should have detected the same principles of circular affinities therein developed, and should have illustrated them by analysis much more fully. Yet, although these naturalists agree in considering the circularity of groups to be the first principle of the natural system, they differ in the determinate number of their groups; those of Mr. McLeay being, in fact, *ten* (or, according to his subsequent belief, *five*); and those of M. Fries *four*. It seems, however, that the *centrum* or typical group of the German botanist, is always divisible into two series (*sed centrum abit semper in duas series*); and that each of his series or groups is a circle appears evident from the following words:—*Omnis sectio naturalis circulum per se clausum exhibet*,—that is, every section, series, or group forms of itself a circle. Hence it follows, that, as one of M. Fries's groups, according to his own account, is always divisible into two, thus their total number is not *four*, but *five*. The difference, therefore, between this theory and the last is rather nominal than real: for as M. Fries at the same time detected the theory"—principle?—"of representation, by

which the contents of one circle typified the contents of a neighboring circle, this, of course, led him clearly to understand, and to define the difference between analogy and affinity."

Thus two natural explorers, in different departments of research, came to the discovery, as they believed, of a natural system, in itself sufficiently striking in its features, and much more so as independently developed. The distinguished naturalists to whom I have compared them had predecessors more or less in their own line. It does not appear that Messrs. McLeay and Fries had any help of this kind; and their views seem certainly to claim, if only on this account, a careful examination.

The system also, as I have said, is one which, taken in all its features, makes too many demands upon its followers, to carry without conquering the minds of practical observers; and that it has been capable of being applied by those who were such to different and extended fields of natural research, argues for it much. It does not hide itself from examination in the mists of geologic ages, or discount unlimited "drafts upon the bank of time," but appeals for examination in the light of nature as it is to-day, and expects its riches from existing bullion. We may take it up hopefully, especially as a numerical system, and which as such we may test by what light we have got from numbers,—a test of a very

strict kind, as must be evident. How will it be borne? How will Scripture vindicate itself here again as the interpreter of nature? Shall we find it still a spiritual realm, and its law therefore spiritual law? Let us see.

We have, then, a quinary system which in a certain aspect of it is also a ternary one. These numbers, three and five, are very prevalent in the organic kingdoms. Among plants the flowers of exogens habitually have their parts in fives, those of endogens in threes or multiples of three. In the animal kingdom, the typical foot of the vertebrate is divided into five, as the joints of the digits are typically three. Three we have seen to be the number of the organic kingdoms, and that which seems to stamp them *as* organic. Moreover, this specializing of parts which is meant by organization implies also the unity of that for which each part exists: the *three* readily connects with *one*, as we know, and one writer has spoken of it as the number of "constitutional completeness." It is thus a number well fitted to be used in the arrangement of those organisms which are also, as it were, the *organs* of the whole creation.

Of the number five in this connection it is more difficult to speak. The meanings already ascribed to it suit only man, not the lower creatures, except it be that which from the human hand speaks of

measured capacity—a not unsuitable meaning, however, for do not these five types, in fact, measure the capacity of that to which they apply? and may it not be that as the three speaks of constitution, the five speaks of *function?* Thus would mammal, bird, fish, amphibian, reptile give us the full range of function—thus the practical meaning of the vertebrated animal. And good it is even to think whether it perhaps may have a meaning! in this direction, if our thought be infantile, it is none the less a good thing to begin to think.

But now we must remember that each of these divisions is a circle, if natural; when we have reached our fifth point we are on our way back again to whence we started. Is it not strange, then, that in this number five, as already looked at in an entirely different interest, we have found a *four and one*—the four of the creature and the one of God—*actually met together!* Thus, having started with *one*, we get back to one again: there is a closing of the circle therefore! and with blessed intimation of a meaning full of the inspiration of hope!

For *why* have our naturalists had to give up that thought of a linear series in nature, which even now, in a mere involuntary retention of it in the mind, spoils the great mass of systems? Why but because that linear series is either something in which we drop ever down without recovery away

from God; or, it may be, ascend, but not toward God, and so in result never to reach Him? This is atheistic Darwinism in its real character, or, on the other hand, mere natural godlessness, which allows things to have come from Him, but will not have them return to Him. This quinary circle, read in the light of its number, reader—a number which, remember, neither of its discoverers knew as having meaning,—tells us that *nature is a circle that begins with God and returns to Him again:* it is a planet that has its orbit from Him, and more; its function and work are to bring us His message, and lead us back to Him again.

Thus the system stands the numerical test well, so far; does it not? Not only so, but the numbers seem ready to bring out of it a wealth of meaning, beyond what we could have imagined. We have only begun, however; and have now to examine, with Mr. Swainson's aid, these primary types of nature, and see what more the interpretation of the numerical system may add to this.

He says,—

"As every natural group is first divided into three circles, so it follows that there are three primary denominations of groups; and these, as we have already explained, are called the typical, the subtypical, and the aberrant: by these names we express their *denomination*, and we shall now treat of each in detail.

"The first distinction of TYPICAL groups is implied by

the name they bear. The animals they contain are the most perfectly organized,—that is to say, are endowed with the greatest number of perfections, and capable of performing to the greatest extent, the functions which peculiarly characterize their respective circles. This is universal in all typical groups; but there is a marked difference between the types of a typical circle and the types of an aberrant one. In the first, we find a combination of properties concentrated, as it were, in a certain individual, without any one of these preponderating in a remarkable degree over the others; whereas in the second, it is quite the reverse: in these last, one faculty is developed in the highest degree, as if to compensate for the total absence or very slight development of others.

"Let us exemplify this proposition by familiar instances. The crow has been considered the pre-eminent type of all birds, it is also the type of a typical circle. It consequently unites in itself a greater number of properties than are to be found individually in any other genus of birds; as if, in fact, it had taken from all the other orders a portion of *their* peculiar qualities, for the purpose of exhibiting in what manner they could be combined. From the rapacious birds, this 'type of types,' as the crow has been justly called, takes the power of soaring in the air, and of seizing upon living birds, like the hawks, while its habit of devouring putrid substances, and picking out the eyes of young animals, is borrowed from the vultures. From the scansorial or climbing order, it takes the faculty of pecking the ground and discovering its food when hidden from the eye, while the parrot family gives it its taste for vegetable food, and furnishes it with great cunning, sagacity, and powers of imitation, even to imitating the

human voice. Next come the order of waders, who impart their quota to the perfection of the crow by giving to it great powers of flight, and perfect facility in walking, such being among the chief attributes of the grallatorial order. Lastly, the aquatic birds contribute their portion by giving this terrestrial bird the power, not only of feeding upon fish, which are *their* peculiar food, but actually of occasionally catching them. In this wonderful manner do we find the crow partially invested with the united properties of all other birds, while in its own order,—that of the *Insessores*, or perchers,—it stands the pre-eminent type. Here, then, is an example of the characteristic properties of the type of a typical circle.

"Let us look at the type of an aberrant circle. The woodpecker is of this description, for it is the permanent type of the climbing bird (*Scansores*), which is an aberrant tribe. Here, instead of finding a combination of diversified characters similar to those belonging to the crow, the whole structure becomes adapted for one particular purpose—that of climbing trees, and extracting from them the allotted food."

I do not, for I need not, proceed with the long and interesting description that follows, of the way in which this is carried out. It is evident that in the last case *unity* is exemplified in the very one-sidedness, or narrowness, of the development. But on the other hand, it is not less, but more, shown to the reflecting mind in that balance of attributes which we find in the former one. *Moral* unity is shown in such a balance of moral attributes in which

is no defect and no excess. The idea is better appreciated by our narrow minds when the idea is narrow. The woodpecker is the typical *climber*, but the crow, the typical *bird.*

Unity of idea, whether the idea be full or narrow, is, then, the characteristic of the typical form. Mr. Swainson has not the least suspicion of any meaning in numbers; yet he has here given the thought as correctly as if he were writing with full knowledge. And he adds,—

"*Perfection in the number of species or of forms* is also a remarkable and very general character of pre-eminently typical groups;"—

illustrating, as usual, with examples. This is, indeed, a consequence of that fullness of idea which is found in whatever is pre-eminently typical. In the crow, we have it exemplified in the species; but it may be equally well in a genus, a family, or an order. And it is striking to find this as fully characteristic of the *first books* of Scripture. Thus Genesis, which heads the books of the Law, Isaiah, the first book of the Prophets, the Psalms, which in the Hebrew begin the poetical books, have fully this character; and in the New Testament, Matthew, first of the Gospels, Romans of Paul's epistles, 1 Peter (which, however, does not with us stand, as it should, at the head of the catholic ones), are plain examples in their respective sections. This may

serve, with all else here, to show how thoroughly the hand of One Writer is to be found alike in the books of Nature and of Revelation.

Now let us pass on to the subtypical groups, and listen again to Mr. Swainson :—

"II. Subtypical groups, as the name implies, are a degree lower in organization than those last described, and thus exhibit an intermediate character between typical and aberrant divisions. They do not comprise the largest individuals in bulk, but always those which are the most powerfully armed, either for inflicting injury on their own class, for exciting terror, producing injury, or creating annoyance to man. Their dispositions are often sanguinary; since the forms most conspicuous among them live by rapine, and subsist on the blood of other animals. *They are, in short, symbolically the types of* EVIL; and in such an extraordinary way is this principle modified in the smaller groups, that even among insects, where no other power is possessed but that of causing annoyance or temporary pain, we find in the subtypical order of the *Annulosa* (*Aptera, Linn.*), the different races of scorpions, *acari*, spiders, and all those repulsive insects whose very aspect is forbidding, and whose bite or sting is often capable of inflicting serious bodily injury. If, again, we look to the subtypical groups of quadrupeds and birds, this *principle of evil* is developed in the highest degree; both are armed with powerful talons, both live on slaughtered victims, and both are gloomy, unsocial, and untamable. The formidable-toothed bill which so strikingly distinguishes rapacious birds, will be found in *every group* which represents them in the entire order of perchers, and these groups

amount to more than one hundred. . . . Even in the smaller subtypical groups of larger circles, which are themselves typical, this extraordinary characteristic is manifested, though in a much smaller degree. Take, for instance, the American group of monkeys (*Cebidæ*, Sw.) which belong to the typical order of Quadrumanes; of that circle it is the subtypical group, and we accordingly find that, while the family of true apes (*Simiadæ*) live, in a state of nature, upon vegetable-diet alone, the *Cebidæ* are partially carnivorous, and that many prowl about to destroy life by feeding upon insects, and even small birds."

He gives much more to the same effect, but this is enough for our purpose; enough indeed to create astonishment if there be room for it, after all that we have had before us already. For how is it again that Mr. Swainson gives us one of the characters of the number two, strongly marked in Scripture and in Nature, while he says and knows nothing of the meaning of the number which stands there side by side with the name of the groups of which he speaks? It is now some years since, when studying the grouping of the Psalms, that I found to my surprise that commonly in a *second* series, whether of smaller divisions or of larger, and often in the second psalm of a very different group, the subject was in some way the *enemy*. It was not till a good while after, that I found the root of the meaning in nature, *two* speaking naturally of *difference*, hence of *contrast*, *opposition*, the *enemy*. And it was not till

later still, that I found in Mr. Swainson's book this definition of his *second* subtypical groups. Is it, with all else that we have seen in the same way, accident merely that it should be so? Will those say it who know what the nature of chance is?

But if not chance, what is it? Is it not, then, surely truth, and of God?

Second, not first, for evil is necessarily inferior to the good,—"a degree lower in organization than" the typical, says Mr. Swainson. A type of evil ordained for us out of the animal creation, he that will may find in Gen. iii. Is not this the secret of the strife in nature that goes on around us, that God would thus provide us with such object-lessons as are these? Does not spiritual law govern the natural world still in all this?

No doubt there is much else in these subtypical groups, and, if we are to conclude from what we find in Scripture, this number will not always have an evil significance, but often the reverse. However, we are just now following Mr. Swainson, and it will be better to let these things develop themselves in practice than to give ourselves to what may be mistaken theorizing. Let us go on now to his third, or aberrant groups, which, however, as containing three distinct types, he can only in general characterize as *aberrant*, or departing from the the more typical forms. We might call them more

appropriately, I think, *specialized;* and then at once shall find their number as a *third* group quite in harmony with their character. The nature of this specialization we shall learn as we take them up separately now.

But these specialized groups stand in relation to the first two, as 3, 4, and 5, while they all come under number three of course also, as types more narrowly specialized than the first two. We have to inquire yet what they individually mean. This is literally true, while I write, that I am myself inquiring with my reader, and propose to take him into my confidence, and think out my thoughts aloud, as I have been doing in much that is already written. There will be in it, thus, much of the charm of a voyage of discovery for us both: who knows what surprises may be in store for us, and with what argosies of treasure we may return to port? Meanwhile, as we have taken Mr. Swainson for our pilot, at least as long as he shall give us satisfaction, we will go on with him.

He says,—

"It will therefore be necessary to consider aberrant groups as naturally divided into three distinct types. We shall, for the present, distinguish these by the names we have assigned to them in ornithology,—the only division of zoology wherein they have been accurately traced. It may be objected to this plan, that to designate a type of

quadrupeds or of insects by the same term as that which is appropriated to birds will lead to a confusion of ideas. But on the other hand, as these types, throughout the animal kingdom, are found to present certain characters in common, the advantages of designating them by common names are abundantly obvious. Hereafter, when the subject has undergone deeper investigation, we shall suggest more comprehensive and appropriate names. For the present, therefore, we shall term them the *Aquatic*, the *Suctorial*, and the *Rasorial:* these collectively form the aberrant circle of every group in the animal kingdom.

"The NATATORIAL or AQUATIC types, represented by the natatorial order of birds, as the name implies, are more especially inhabitants of the waters. They possess many and striking peculiarities, modified indeed, in the most astonishing manner, but more conspicuous perhaps throughout all natural groups than any of those belonging to other types. We shall consider these characters under the heads of structure and economy, and exemplify our remarks by some familiar instances.

"I. *As to structure*, aquatic types are chiefly remarkable for their enormous bulk, the disproportionate size of their head, and the absence or very slight development of the feet. If we look to the primary divisions of the vertebrated animals, we see one of those peculiarities very strongly marked in the fishes, the only class wherein the feet, in *all* individuals, are entirely wanting, while every one is aware that no fish can exist unless in its own element. . . . . As we approach the more perfect animals, we begin to see the development of another singular feature; namely, a very large, thick, and obtuse head, furnished with jaws capable of great expansion, and termin-

ated by a blunt or truncated muzzle or snout. This structure implies the peculiar power of seizing their food by the mouth alone, without the assistance of feet or claws; and as this power would only be necessary to such animals as lived upon others, we according find that nearly all natatorial types are carnivorous. . . . . Subtypical forms, as we have already seen, are pre-eminently carnivorous, but they differ from the natatorial (which always follow them) in this, that the food is captured by the aid of the *claws*, whereas in the types we are now speaking of the mouth alone is the instrument of capture. . . . .

"II. *As to the economy* of the aquatic types, we have already premised that they are almost entirely carnivorous—a habit which is naturally to be expected in any group which joined, or immediately blended into, the subtypical. We have seen that the feet are slightly and often not at all developed: an incapacity for quick motion is the natural result of such an organization. . . ."

I have omitted Mr. Swainson's illustrations, because they are not at present of any service to us, though we may more or less have need of them at a future time. All we want at present is the typical idea which we are then to proceed to test by the meaning of the numbers. The number is 3, which easily may here indicate specialization or transformation, as it is in outward form indeed carried out in these forms to the extreme. Three is also the number of solidity, which in popular phrase is applied to bulk; but this is much more doubtful in

application. To a strictly natatorial type the number would not point, nor perhaps *any* number, and when Mr. Swainson reckons as of this type the owl and the ostrich, it is plain that he cannot mean to insist upon the absolute accuracy of the designation. He can only mean that in the aquatic tribes we have in general the best exemplification of the type. Of carnivorous habits also the numbers say nothing.

What we might infer from the numerical stamp would seem to be that we are at the furthest extreme from the typical, as in fact we are nearly at the opposite point of the circle,—the most transformed or in disguise: for the *three* is doubly stamped upon it by its position in the quinary series and its position also as a member of the aberrant circle.

It is clear that either Mr. Swainson's definition somewhat fails here, or the power to apply the numbers, or else the numbers do not apply. There is a faint resemblance, but not at all what we have found before, or what we had felt encouraged to expect. On the other hand there is no positive disagreement either, and the clue to a fuller agreement may be found as we go on to the fourth type with our guide.

"We are now to consider the SUCTORIAL type of form: this corresponds with the *tenuirostral* type among perching birds, the *grallatorial* among the orders of that class,

the *gliriform* among quadrupeds, and the *onisciform* and *vermiform* in the class of insects. We shall, however, designate all these order under the common name of suctorial, because it is more generally applicable to the habits of the animals here alluded to than any other. One of the chief peculiarities of this type is, that the food is imbibed by suction; a mode of nourishment which is of course accompanied by many remarkable deviations from the structure of other types. These are always the smallest in point of size, the most *feeble and defenseless* in structure, and the most defective in the organs of mastication. In all these characters the suctorial stands in direct opposition to the natatorial type. In such as belong to the vertebrated circle, the feet are always fully developed; for these animals are peculiarly active, and enjoy in a remarkable degree the power of leaping and running. The suctorial form is also widely different from the natatorial in other respects; there is a great length or attenuation of the body, the head is always very small, generally prolonged into a pointed snout, and the mouth as adapted for sucking is uncommonly small: in some few instances it is not, in fact, apparent. All animals belonging to this type are shy, and evince little or no propensity to become domesticated. They are without offensive protection; but nature, as if to screen them from their enemies, has endowed them with great caution, uncommon vitality, and in many cases has protected them either with a hard skin, or a coating of bony armor which entirely envelops their body, and repels all injury."

Here it is evident that there is again a correspondence between the type and its numerical

stamp. "Weakness" is undoubtedly one of the most fundamental meanings of the number 4, as it is the fundamental thought in the type here. And if to this we add that it is the number of the mineral kingdom, this might well remind us of the many of these to whom it has been given, as to coral for instance, to provide for itself and in its own structure, the strength of the rock as their defense. The suctorial element in the type we can scarcely expect to find indicated in the number; but on the whole there is a clear and unforced correspondence between this and the type.

Only one more remains to be considered:—

"The RASORIAL type, so termed in ornithology, is the third and last which enters into the aberrant circle—which circle is always closed by the union of this type with the NATATORIAL; hence it follows that they approximate in their general characters. First, as to the form and structure of rasorial types. They are, in general, remarkable for their size; being inferior only to the natatorial. From these they are further to be distinguished by the strength and perfection of their feet; the toes of which (in vertebrated animals) are never united so as to be used for swimming. This perfection, however, is of a very peculiar kind; since it is confined to the powers of walking on dry land, or of climbing among trees. These scansorial powers, in fact, although occasionally found in other types, are so very frequent and remarkable in this, that it may be considered one of the pecularities of the rasorial structure. This is the type so remarkable for the greatest

development of tail; and for those appendages, for ornament or defense, which decorate the head. . . . . But it seldom happens that both these peculiarities are united in the same group. . . . . The food, in conformity to their dispositions, is almost always vegetable. . . . . This is again, one of the strong points of opposition between this and the [natatorial] type.

"But what more especially distinguishes the type we are now describing is the superior degree of intelligence and docility that runs through all the groups of vertebrated animals belonging to it. It seems to have been ordained by Almighty Wisdom, that there should be one type above all others whose powers were to be more especially devoted to *man*, and which should evince an aptitude and a disposition to submit to his dominion, far above all other created things. This is the grand characteristic of all rasorial types among the more perfectly formed vertebrated animals, whose size or structure are in any way adapted to answer the end proposed. This principle of nature was partially perceived by Linnæus; an analogy, indeed, so apparent to the commonest observer, that we can only feel surprise at its ever having been questioned by any one, much more by those who are naturallsts. . . . . All our quadrupeds of burden or of food are taken from the *Ungulata*. The horse, the ox, the sheep, and the goat are in our meadows and pastures; while the dog is a rasorial type of the *Feræ*."

I have quoted so much that we might have the characters of this type fairly before us. At first sight, it would look as if they could be of no service, as we have already confessed as to this number, 5,

how little the thoughts that come under it seem to apply to the lower creation. But it is one of the many encouragements that we have been finding all the way through the present examination, that the numbers not only interpret, but also receive interpretation from nature; and so it is in this case. The number five as applied to man, speaks of man with God, the 4 of the creature being added to the 1 of the Creator; and we have brought this forward already to show that with 5 the circle closes therefore. But in the lower sphere in which we now are —penetrated everywhere as it is however with divine meaning—the 1 represents man, instead of God, but man as His vicegerent and in His image. Thus this last character of the rasorial type, as described by Mr. Swainson, the "aptitude and disposition" of those exemplifying it "to submit to his dominion," is surely as remarkable as unexpected an illustration of the number before us. Man with God means man subject to Him, under His dominion: here we have the shadow of that in the lower creatures.

And thus, may we not say, at the end of the survey of the creature, we are reminded by these examples that they are put into man's hand to be his servants,—a good and needed admonition of the hand that bestows all, and to take reverently His gifts—gifts, but thus trusts, even as this number 5 is

the number which speaks also of our own responsibility, and of the account we have to render to Him who has bestowed the gift.

CHAPTER X.

Among the Creatures.

PERHAPS, for my own credit, I ought to stop here. Perhaps even for the cause I hope to serve—which is very much to lead others to appreciate more God's gift to us of the creatures, and the full purpose of this gift of God,—I might better stop, content with what awakening of desire I may hope to have achieved, than go further to show how small the distance I have traveled in these inviting fields. I confess that with me that impulsive self of which the Duke of Argyll has spoken to us, may be refusing the voice of that calm higher wisdom which ought to be rather heard, when I attempt to face the difficulties of the practical application of such principles as we have been considering, and lead my reader face to face with Nature.

Let it be conceded that we have obtained some real glimpse of the divine side in her,—heard a Voice from its very familiarity strange from such a quarter,—a Voice yet which sounds as a voice of

home wherever we hear it,—have got principles, too, which have not only stood wonderfully the tests to which we have been putting them,—granting all which must be in fairness granted, yet we seem little furnished, after all, for what evidently now lies before us. These types of nature, though real, are yet but very slightly sketched; their inner meaning, for which, Spiritual Law would say, they must above all exist, is yet more a hint than a revelation; other principles, yet unknown, may (and very likely will) come in, to modify the application of those we have in measure learned.* All this is true, and yet we must go forward. "Every one that seeketh findeth" is a motto we may still take for our encouragement. And have we not, in fact, found much while on the road? It may be that our Father's book of Nature, like His other book of Grace, requires less the learning of the sage to read it than the teachable spirit of the little child.

One of the first places in which we find our father Adam before the fall is among the creatures. "And out of the ground the Lord God formed every beast of the field, and every fowl of the air, and brought

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*Thus it is to be remarked, that no one must suppose that we are giving hasty adhesion to the whole system of Messrs. M'Leay & Swainson. We believe there is truth in it; but that is very far from saying that it is the *whole* truth: we neither accept it wholly nor, on the other hand, condemn it for defects or mistakes, which adhere to all that is merely human. In the work and Word of God alone there are none.

them unto Adam, to see"—that *Adam* might see—"what he would call them; and whatsoever Adam called every living creature, that was the name thereof. And Adam gave names to all cattle, and to every fowl of the air, and to every beast of the field."

So that one of man's first lessons was a lesson of zoology; for the giving names to all the creatures surely implies intelligence about them; and the names stood for qualities in them that might be and were discerned. Adam was possessor of no language but his own, and could not hide in magniloquent Greek, as do our zoologists now, the emptiness of an unmeaning name. Could we recall, as we cannot now, those first names, we should surely find convincing proof that Adam was a full-grown man, and that nature appealed to him in a different way from that in which now it appeals to us, from our text-books of zoology. Indeed, the Hebrew names, which must be no very far-off kin to Adam's, may well contain plenty of treasure in this way awaiting the explorer. Since then, we have dissected the forms, and too much lost the life and power.

However, we will not theorize: we will go abroad and breathe the fresh air of God's world, in which, let us remember, not a sparrow falls to the ground without Him, and He clothes the lilies of the field with a glory beyond Solomon's. Our interest in it

may well be inspired by His interest, and that which we find of Him in it be in truth but fellowship with Him.

Supposing still that what is written largest should be the plainest, and desiring to get, as the introduction to all else, the general plan of creation, let us take up the animal kingdom briefly now, to study its divisions—of course, the largest ones.

The types of which we have been speaking apply only to the divisions of the animal kingdom; but the numerical system, as we have seen, goes beyond this, and characterizes all nature. We may take it at least as a fixed principle, that wherever the numbers *are*, they are meant to speak to us; they have a *reason* in the divine, and a reason open to be discovered by us to an extent practically unlimited, except by unbelief. Whatever is of reason is meant as an appeal to reason, God's written Word being always the interpreter of the obscure and parabolic utterances of the book of nature. This we shall find, the more firmly we grasp it, and the more faithfully we adhere to it, to be proportionately fruitful as a principle. I appeal to the reader if we have not found it so.

The kingdoms of nature are not *five*, nor *three*, but *four*. The organic kingdoms are, however, three; but they do not constitute a circle. On the other hand, their 3 and 1 speak, as we have seen, of

the manifestation of the Creator in the creature, and justify our search into it that we may find Him in it. An unmeaning act would not be worthy of Him: we will not ascribe such to Him.

Are there five types of form in the animal kingdom? To this, of course, there will be various answers. We do not propose to discuss them. The tendency now is away from the thought of original types at all. A mindless evolution, of course, would work in its own blind way:—

> "Experience has shown," says Dawson, "that those naturalists who discard the idea of intelligent plan as embodied in nature, and who regard it as a mere chance product of conflicting forces and tendencies, necessarily arrive at irrational modes of classification."

Cuvier divided animals into four main groups, basing this upon *plan of structure.* These divisions are those of Vertebrates, Articulates, Mollusks, and Radiates. Prof. Henry James Clark has, in his "Mind in Nature," elaborately argued for a fifth division, commonly conceded now, that of Protozoa; and it is this arrangement I propose to take up and examine in the light of what knowledge we have already gained. We will arrange them thus:—

1. Vertebrata.

5. Mollusca. 2. Articulata.

4. Radiata. 3. Protozoa.

If this be a circle, as we have been told it must

be, to form a natural arrangement, we may begin to trace the circle at any point within it. We will begin, therefore, with the simplest because the lowest form, the Protozoan.

"The type of this division," says Prof. Clark, "is found in its relation to a *spiral*; it is the oblique or *spiral* type."

Of this he gives many examples, entering into details, as to which it would be, for our purpose, wholly useless to follow him. The simple fact is what interests us; because the spiral type is (as revealed by the arrangement of the leaves and flowers) that of the vegetable kingdom, and the number (3) attached is that of the vegetable kingdom. In this, also, the lowest division among animals, are found the forms actually nearest to the plants, which, strangely as one might think, approach the animal kingdom most nearly in their lowest forms.

The forms here are mostly microscopic, and reveal their structure only to the skilled observer. It is no wonder, therefore, that this should be in debate; nor is it possible for us here to take part in these discussions, even if we had (as we have not) competency for them. We must refer those who desire it to Prof. Clark's book.

In their minute size, the Protozoa are certainly in contrast to Mr. Swainson's remarks on aquatic types, although they *are* aquatic. He puts them, indeed,

in his fourth group accordingly, along with the zoophytes (corals, etc.); but this we shall have to look at when we come to these. As putting them in this third division, we have the facts simply of their being at the furthest remove from typical forms, of which there is no doubt, and their spiral structure, and other assimilation to vegetable forms. But of these lowly beings we know too little to be able to speak with much understanding.

Still, even here, we may find facts of a most curious interest, though through this relation to the vegetable rather than any proper insight into the nature of these animalcules. Can we find any "spiritual law" in a *spiral type?* The leaf arrangement of the plant may suggest some answer, strangely connected as it seems with the courses of the stars! But is it not all one universe, the work of One Hand? Have we not been taught that one mysterious law links the fall of the apple with the courses of the stars? It is simple and familiar knowledge.

Prof. Cooke shall give us, from his well-known book,* the law in question.

"If we compare the periods of revolution [of the planets] round the sun, expressed in days, we shall find another simple numerical relation, as shown by the following table:—

* "Religion and Chemistry." (Revised edition, pp. 271-275.)

LAW OF PERIODIC TIMES.

PLANET.	OBSERVED.	THEORETICAL.	FRACTIONS.
Neptune	60,129	62,000	—
Uranus	30,687	31,000	$\frac{1}{2}$
Saturn	10,759	10,333	$\frac{1}{3}$
Jupiter	4,333	4,133	$\frac{2}{5}$
Asteroids	1,200 to 2,000	1,550	$\frac{3}{8}$
Mars	687	596	$\frac{5}{13}$
Earth	365	$366\frac{8}{13}$	$\frac{8}{21}$
Venus	225	$227\frac{13}{21}$	
Mercury	88	87	$\frac{13}{34}$

"It will be noticed that the period of Uranus is half that of Neptune, the period of Saturn a third that of Uranus, the period of Jupiter about two fifths that of Saturn, the period of the Asteroids about three eighths that of Jupiter, the period of Mars about five thirteenths that of the Asteroids, the period of Venus about eight twenty-firsts that of Mars, and the period of Mercury about thirteen thirty-fourths that of Venus. The successive fractions are very simply related to each other, as will at once appear on writing them in a series:—

$$\frac{1}{2},\ \frac{1}{3},\ \frac{2}{5},\ \frac{3}{8},\ \frac{5}{13},\ \frac{8}{21},\ \frac{13}{34},\ \&c.$$

"Notice that after the first two, each succeeding fraction is obtained by adding together the numerators of the two preceding fractions for a new numerator. From this series, however, the earth is excluded. Its time of revolution is almost exactly eight thirteenths of that of Mars, and that of Venus nearly thirteen twenty-firsts that of the earth; but although these fractions do not fall into the above series, they are members of a complementary series beginning—

$$\frac{1}{2},\ \frac{2}{3},\ \frac{3}{5},\ \frac{5}{8},\ \frac{8}{13},\ \frac{13}{21},\ \&c.$$

"This simple relation was discovered by Prof. Peirce, and he has proposed an explanation for the anomaly presented by the earth. But it is not important to dwell on this point. My only object has been to show that simple numerical relations appear in the planetary system, and this, as I trust, has been fully illustrated."

One moment, to indulge the theological fancy of a mind intoxicated, if you will, with reason. I have no spiritual understanding of the formula here, and can say nothing as to it; but this exceptional relation of the earth does seem as if it might be a note of—*is* certainly in strange accordance with—its exceptional relation *spiritually* to the other creatures of God, is it not?

Then notice,—"for ye suffer fools gladly, seeing ye yourselves are wise,"—that, after all, the earth is reduced to obedience to law: it is not left to be an anomaly among the planets, but brought back, may we not say? And how? *By a new beginning and a new law, which none the less falls at last into harmony with the old order!!* Is it not what grace has at any rate actually done for us?

Further, look back a little. Behind Mars we find in the table that strange group of asteroids, which always has seemed to me, and I suppose to others, suggestive of catastrophe among the stars; they seem so like shattered fragments of a world that was. Here, in a general way, however, the order is

maintained; but *among* them, as we may say, not *by* them. You have to find an average among many divergences, as if law bound them only as reigning spite of opposition. Was there not indeed a break like this, before the earth left its orbit, when the angels rebelled?

And yet *then* there was no new beginning! That began with—*earth?* No! but with a planet standing in its right place in the former order of things, as Mars stands between the asteroids and the earth, while it *begins the new one!* Blessed be God! there is indeed One come into the ranks of the obedient, new head of blessing for a restored earth, with whom all begins again! Reader, have you owned His name, and taken your place in the new order of things harmonious with the old? Will *you* believe a gospel which the stars, in the light of the science of the day, preach so convincingly?

Well, we have wandered: we will return. Do you know that it was only Mr. Cooke's tables, and his exposition of them, that just now led me into what are new thoughts to me entirely, and the impulse to give them to you, reader, I have not cared to resist. If all else is full of it, must there not be a gospel also of the stars?

But to proceed with Prof. Cooke:—

"Passing now to the vegetable kingdom, we find again the same numerical laws. The leaves of a plant are always

arranged in spirals round the stem. If we start from any one leaf, and count the number of leaves around the stalk, and the number of turns of the spiral until we come to a second leaf *immediately over the first*, we find that, for any given plant, as an apple-tree, for example, the number of leaves and the number of turns of the spiral are always absolutely the same. The simplest arrangement is where the coincidence occurs at the second leaf, after a single turn of the spiral; and this may be expressed by the fraction $\frac{1}{2}$, whose numerator denotes the number of turns of the spiral, and whose denominator the number of leaves. The next simplest arrangement is where the coincidence occurs at the third leaf, after a single turn of the spiral, and may be expressed by the fraction $\frac{1}{3}$. These two fractions express respectively the greatest and the smallest divergence between two successive leaves which has been observed. The angle between two successive leaves, therefore, is greater than 180° or half the circumference of the stem, or less than 120° or one third of the circumference. The arrangement next in simplicity is where the coincidence occurs at the fifth leaf, after two turns of the spiral, as is represented in the preceding figures. Other examples are given in the table which follows, and it will be seen that we have precisely the same series of fractions in the arrangement of leaves round the stem of a plant which appears in the periods of the planets. The fractions of this series are all gradual approximations to a mean fraction between $\frac{1}{2}$ and $\frac{1}{3}$, which would give the most nearly uniform distribution possible to the leaves, and expose the greatest surface to the sun."

Thus the Hand that has arranged the leaves of

the plants has arranged also the courses of the planets. But the analogy is not seen at its fullest yet. For the orbits of the planets are said to be elliptic, while the line that would connect the leaves of a plant is *spiral*. But if we take into account that the sun, with all its planets attending, is moving through space in an orbit, doubtless, of its own, (for every thing in the heavens is obedient to law,) then these elliptical orbits become, in fact, spiral paths, and the analogy between the vegetable and the planetary world is perfected.

What is the spiritual meaning of the spiral, so interpreted? In the planet, it is onward progress; in the plant, upward;—orbital, we may say, in each case, or obedient to the centre; in the plant, a law of growth, of development, and production. How well fitted to this third place in which we find it in the Protozoan! Here, indeed, in minute forms, as if to teach us lowliness as the accompaniment of this upward tendency. It is in our littleness we climb Godward, and, blessed be God! it is in obedience, and as connected with our Centre also, that we do this. Sanctification for us is the *ascending spiral:* holiness is heavenliness. Can these lowest of creatures tell us this?

However, we must defer the final answer till we have completed the zoologic circle. Until we find the connection, Mr. Swainson would tell us we can-

not put in its place any member of it. Let us go on to the—

RADIATA.

Here we find Mr. Swainson's third division, along with a part also of his fourth, under the name of Acrita, which includes the corals and other animals formerly called Zoophytes, as well as those of the last division. Prof. Clark, whose arrangement is followed here, preserves the old Cuvierian division, with the separation only of the Protozoa from them.

The type of form is indicated by the name. "There is a regular disposition of parts around a common centre, as in the star-fish or the sea-anemone, which in the most characteristic forms are but repetitions of each other; and one or more of them may be removed without injury to the functions of the rest. In most of the Radiata, the parts so lost are replaced by a new growth; and not unfrequently it would appear that these parts may themselves reproduce the whole structure."

A TYPICAL RADIATE: THREE POLYPES OF RED CORAL.

In this last respect they show, it has been said, an affinity with the vegetable kingdom, as also in their circular symmetry, so that they have been sometimes called "the flowers of the animal kingdom,"—nay, in old time, were mistaken often for flowers.

As our fourth division, however, they stand opposite the *Mineral* Kingdom, and *radial* symmetry is as well that of the crystal (as in the snow-flake,) as it is that of the plant. It is in this division also that we find the corals accumulating their masses of actual stone. This coral is an internal, not an external secretion, and forms the support as well as the retreat of the polype. The urchins and sea-stars crust themselves over with calcareous tests. The animal functions are almost at their lowest: sensation and motion are alike torpid.*

Thus their numerical place seems fully justified. The number 4 speaks of weakness and passiveness, for which the strength of the rock is their defense; not only outwardly, as we have seen, but inwardly, —strength *imbibed and experienced*,† their own and

* Here, indeed, there seems a contrast with the activity ascribed by Mr. Swainson to the "suctorial" type; but it will be observed that he limits his remarks as to this to the Vertebrata. The number says nothing as to it.

It will be noted, on the other hand, that the capability of division which characterizes the Radiate is strictly according to their numerical place. Four is the first number that is capable of division.

† In the urchins and sea-stars, external; but they are not now considered typical of the Radiata.

yet not their own. Thus it is that the true experience of the strength of the Rock—of divine strength—does not make something of us, but every thing of God. We remain what we ever were. "Confidence in the flesh" is broken, and *all* self-confidence is recognized as confidence in the flesh.

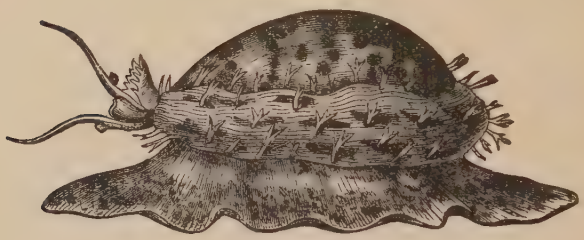
Here we may encounter easily the reproach of torpidity and passiveness, such as we find in the Radiate. Sensation and motion may seem at a low ebb. In fact, the apprehension of God for us gives quietness and patience; and if "patience have her perfect work," we are "perfect and entire, *wanting nothing*." There ensues the stillness which is so little understood, and for which even the Marthas of their own kindred turn upon the Maries sitting at His feet, and rebuke them solemnly before the Lord. But it is not spiritlessness, nor carelessness, only the controlling power of His presence over the soul; and He will justify it.

Good will it be if we get fast hold of the lesson given us by these lowly creatures. If the sluggard may get *his* lesson from the ant, the restless heart may learn of the coral-blossom from the rock. God has filled nature with these pictures, preaching to the eye, though, alas! having eyes, we see not.

But we must go on. The fifth class, for Mr. Swainson and for ourselves, is now the Mollusk.

The—

MOLLUSCA



A TYPICAL MOLLUSK.

plainly reach up toward the Vertebrata, and in character are intermediate between these and the Radiata. The repetition of parts and the radial symmetry are gone: the body of the Mollusk is "monomerous"—an indivisible unit. On the other hand, the sluggishness of movement in general remains, the animal functions being only somewhat more developed than in the last case.

"The body of the Mollusca is almost entirely occupied by the organs of nutrition; and the organs of sensation and locomotion are entirely subservient to the supply of these. We find in the lowest tribes of this group living beings which are fixed to one spot during all but the earliest period of their lives, and which scarcely possess within themselves so much power of movement as that enjoyed by the individual polypes in a mass of coral; and yet these exhibit a powerful and complex digestive apparatus, a regular circulation of blood, and an active respiration. But we nowhere find, throughout the whole animal kingdom, that the conformation of these organs *governs* the

shape of the body; they rather *adapt* themselves to the type which predominates in its structure, and which is principally manifested in the disposition of the locomotive organs. Thus the stomach of the star-fish sends a prolongation into each ray; whilst in the Articulata, on the other hand, we find the digestive cavity prolonged into a tube, in accordance with the form which the body there possesses.

"Thus we see that, in regard to external shape and arrangement, the apparatus of organic life has no definite plan of its own; and in the Mollusca there is an absence of any general type to which it may be made conformable. Hence the shape of the body varies extremely in those classes in which it is entirely or principally composed of these organs, and no general character can be given which shall apply to all or even a large part of the animals composing them." (*Carpenter's Zoology.*)

In a large part of the sub-kingdom, while the body is thus, as one may say, shapeless, what gives them, for the mass, most of the interest they possess, is the often large and curiously made shell, on account of which they are familiarly known as "*shell-fish.*" The beauty of form and color which is lacking in the animal itself is bestowed upon the shell; and yet for the animal itself, except as shelter, the shell is of small account apparently, and all this elaborate ornamentation seems thrown away. The shell, after the death of the animal, is all that remains to recognize it by, as the body (as conveyed by the name of the group) is entirely soft, and

passes away, the shell, on the other hand, abiding quite untouched.

Thus the 4 and 1 are easily recognizable in this sub-kingdom. The bodily weakness and the rock-shelter of the Radiate find place in the Mollusk, which rises yet into an indivisible unity quite opposite to what we find in the other, developing in the higher forms head-characters, and even an internal cartilaginous sheath for the nerve-centres, which assimilates these animals to the Vertebrata.

But what about the numerical stamp in its inner meaning?—how holds the spiritual law again in regard to this number 5, which seems at first sight as if it would be so little capable of application to these lower creatures? Let us see if we can understand it.

The number 5 has, as we have seen, for its fundamental meaning the thought of man in his weakness in relation to the almighty God. We have seen it as the centre of all harmony for man to be here in his place, in creature-nothingness, but with God his God. Christ, in His name "Emmanuel," brings these two together,—*is*, for man, this God in relationship, his strength, his hiding-place. How beautifully does the feeble Mollusk in his shelter speak of that!

Not, however, as one might at first think, the lesson of the Radiate over again. The strength

that is found in weakness there images a strength which is imbibed and internal. The rock that shelters there is yet *within* (in what is most typical). Only in the Mollusk is it really *apart from*, though in intimate companionship with, the being that it shelters. "Thou art my hiding-place,"—"Thou hast been our dwelling-place," (Ps. xxxii. 7; xc. 1,) is only fully brought out in this type of form. Here, how true it is that the Mollusk hides itself in its shell! *not* merely as its refuge, let us remember, but as giving all the *glory* to its place of refuge! How exquisite, in this light, are the painting and sculpture of these beauteous shells! For—let us remember again—it is the Mollusk that *makes* its shell; and so do we, by our own receptivity of the divine revelation, (as the being we are considering, by *its* receptivity of light and air and food, the divine provision for it,) *make*, each for himself, the One we go with.

Let us not wonder, then, at the great variety, and difference as to beauty, of these shells; or that there are naked Mollusks also, wanderers from their type. Nature depicts for us, not merely what is normal, but the whole range of what exists. And with which of us is the God he goes with the all-glorious God He ought to be? How blessed yet to be able, in our measure, to glorify Him! Let the being that adorns its shell and not itself show us

what is the sure sign of one who walks with God. And let the weak and perishable nature of the being that takes refuge in the shell, compared with the permanence and beauty of the shell itself, warn us how the glory of man shall perish, but the glory of the Lord abide forever!

We must not leave the Mollusk, however, before we have noted that that which is developed in it is, above all, the nutritive function. Digestion is everywhere its strongest point, as we have seen: it is made up for this, if we may say so; and this is of the very simplest application in relation to the spiritual idea which governs it—of which it is the expression. We must receive from Him to whom we give, for of His own alone do we give to Him. She who had the box of ointment for Christ's head is that Mary who had her place first at His feet; and if we are to imitate her in the last, we must acquire competence where she did. It is a good part which shall not be taken away, although the service to which it leads may be as little appreciated, even by disciples, as was hers.

In the order in which we have been proceeding, the next group to be considered would be the Vertebrata; but as this is the most comprehensive type of all, and needs to be compared with all the rest, we shall approach it now from the other side, and for this purpose take up first the—

ARTICULATA.

A TYPICAL ARTICULATE.

These constitute, for Mr. Swainson and ourselves, the second or subtypical group,—a most distinct and easily comprehended, as well as excessively numerous one. What with insects, crustacea, and

worms, its numbers exceed that of all the other sub-kingdoms put together. According to the character ascribed by Mr. Swainson to the sub-typical groups, we shall be prepared to find it the most aggressive and destructive of all types; but, as we have already hinted, we must not limit it, therefore, to what is significant of evil. Strife and destruction, though incident to an evil state, of course, are not necessarily therefore themselves evil: far from it. Christ came that He might "destroy the works of the devil," and "him that hath the power of death,—that is, the devil" himself. And we are all enlisted in this strife; Christ's people are His soldiers, and must "war a good warfare," "fight the fight of faith," "contend earnestly," "wrestle with principalities and powers." And though "the weapons of our warfare are not carnal," yet are they "mighty through God, to the pulling down of strongholds."

The number 2 is stamped upon the Articulata in the most perfect way. In them, bilaterality is most perfectly developed from the head to the extremity of the body, while the whole animal is divided into rings, which consist of an upper and an under arch, each of four pieces, arranged in *pairs* on each side of the middle line. Eight pieces give us thus the cube of 2.

"The different rings or segments of the body always

bear a strong resemblance to each other, and sometimes, as in the *Julus* [wire-worm] and the *Scolopendra* or Centipede, they seem like actual repetitions of each other. Each ring may bear two pairs of appendages, or members." (*Carpenter.*)

"The tendency to repetition exhibited by the segments of the body is as remarkable in the disposition of the muscles and of the nervous system as it is in the arrangement of the general envelope. In most animals of this sub-kingdom, each ring in its complete state possesses a pair of nervous ganglia, united on the central line; and these ganglia are connected together by a double cord of communication which runs along the lower or ventral surface of the body.

"The muscles, like the parts of the body themselves, are arranged with great regularity and exactness on the two sides of the median or central line; so that the *lateral symmetry* of the Articulata is most exact. Where the segments and their appendages have a similar form and action, their muscles are but repetitions of each other."

"The alimentary tube frequently passes straight along the central line, from one extremity of the body to the other, with a dilatation near its commencement,—the stomach; and where this is not the case, the convolutions which the intestines make are usually few in number. Instead of a heart, we find a *dorsal vessel*—a long tube placed on the central line of the back, and divided into segments, corresponding with those of the body,—each segment being, as it were, the heart for its own division. The respiratory apparatus, too, is arranged with the most perfect symmetry."

We have before suggested the connection of this

bilateral symmetry with power of movement. Here, as necessarily among what are pre-eminently Nature's warriors, we find the greatest activity.

"The development of the organs of nutrition in articulated animals would seem to be altogether subservient to that of the locomotive apparatus;—their function being chiefly to supply the nerves and muscles with the aliment necessary to sustain their vigor. The power of these muscles is so great, in proportion to their size, that, in energy and rapidity of movement, some of the articulated tribes surpass all other animals."

When we remember the ants, the white ants, the bees, etc., we realize that social instincts also are developed in a striking manner among these, and in the ants find specialized warrior-forces acting like a trained host. A large proportion of the whole group, as the crabs, beetles, wire-worm, centipede, have their coats of mail also for defense.

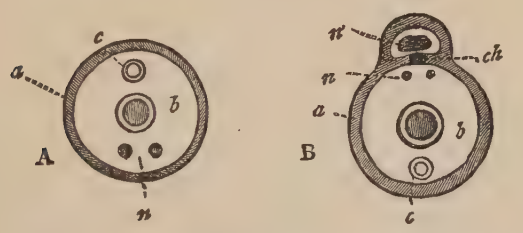
Thus the spiritual idea which reigns among the Articulata is not hard to trace. That it is in complete harmony with their numerical place needs also no insisting on. The general thought is all that we can here trace: for details, we have no room; but there is here a fruitful field for any who will labor in it.

We come now, lastly, to what is first in position among these types,—that of the—

VERTEBRATA.

The Vertebrata are, as every one knows, so called

from their possession of a jointed column inclosing the spine, the skull being only an expansion of the same in order to protect the brain in like manner. Brain and spine, rather than the bony case which environs them, are really the distinctive characters of these highest of the Animal Kingdom.



COMPARATIVE DIAGRAM OF VERTEBRATA (B) AND INVERTEBRATA (A).

(*a*) Body-wall. (*b*) Alimentary Canal. (*c*) Circulatory System. (*n*) Sympathetic Nervous System; (*n'*) Cerebro-Spinal Nervous System.

"In all *Invertebrate* animals, without exception," says Prof. Nicholson, "the body may be regarded as a single tube, inclosing all the viscera; and consequently, in this case, the nervous system is contained within the general cavity of the body, and is not in any way shut off from the alimentary canal. The transverse section, however, of the Vertebrate animal exhibits *two* tubes, one of which contains the great masses of the nervous system,—that is, the cerebro-spinal axis, or brain and spinal cord—whilst the other contains the alimentary canal and the chief circulatory organs, together with certain portions of the nervous system known as the 'ganglionic' or 'sympathetic' system. Leaving the cerebro-spinal centre out of sight for a moment, we see that the larger or visceral tube of the

Vertebrate animal contains the digestive canal, the hœmal system, and the gangliated nervous system. Now this is exactly what is contained in the visceral cavity of any of the higher Invertebrate animals; and it follows from this, as pointed out by Von Baer, that it is the sympathetic nervous system of Vertebrates which is truly comparable to, and homologous with, the nervous system of Invertebrates. The cerebro-spinal nervous centres of the Vertebrata are to be regarded as something superadded, and not represented at all among the *Invertebrata.*"

It is clear that this additional part is that which *governs* the whole, moreover. Without being able to attribute to the brain the mental power ascribed to it by Dr. Carpenter, we may assuredly see in it a means of concentrating and combining the powers existing in those storehouses of nerve-force which we find in the ganglionic centres which make up the whole nerve-system of Invertebrates. And thus a unity of control is established over every part which we do not find in the latter,—a unity which is to be discerned in the fact that in the Vertebrates such divisions of the one animal into two, or even replacement of lost members, as we find in other sub-kingdoms, is no longer possible. The animal is here one, and indivisible, and that not by simplicity of organization, as in the Mollusk, but by subjection to one controlling power. Unity, from the full harmony of many organs and functions,—not the narrow unity of one prevalent idea, but

that which we have seen to be characteristic of groups pre-eminently typical—distinguishes the Vertebrate.

The spiritual idea is easily read here as harmonious obedience, in which is expressed that *integrity* or oneness which is indeed the first principle of the life of faith, and which produces, where it is found, the highest development of every faculty of the soul. Thus in the Vertebrate now every function is elaborated as in no other type,—digestion and nutrition beyond the Mollusk, locomotion more perfect though not more various than the Articulate, the internal support without the immobility of the Radiate. In the circulatory system a true *heart* for the first time appears, and becomes a new centre of force in the body. Sensation is correspondingly awake, as the blood reddens, and the nerve-power manifests itself in a new energy and directness of application. How many pages could one write upon the spiritual meaning of all this! and yet I shall not; for my object is not to sermonize, but to bring my reader face to face with the God of nature for himself, when the application will be easy. These types are wonderfully full, detailed, and life-like pictures, needing little help to understand them, when once we are in a responsive attitude of soul. What wonder, when in them God has written, not for the philosophers, but the whole race of man,

just as He has written His other book of revelation. Near enough to Nature's heart, we shall find that it is God, the God and Father of our Lord Jesus Christ, who is the Heart of Nature.

CHAPTER XI.

Life in its Lowest Circle.

BRIEF as our glance has been, we must now leave the Animal Kingdom, to take up another volume of Nature's library, more ancient, and its language perhaps more difficult to read, and yet where diligence will assuredly find itself abundantly rewarded. The place of the Vegetable Kingdom has been as yet only just indicated. We must try now to realize a little what it presents to us in its primary divisions.

But, first, what is the vegetable type itself as compared with the animal? It would seem that if spiritual law reigns throughout nature, there should be some broad distinction between the two, which we could grasp as easily as we can those of the divisions; and it should be found that the classification of forms involves, where true, a classification of thoughts and spiritual principles also. A hard test this for the numerical system! and yet if this can be shown to be the case, even tolerably, then its triumph is indeed assured. For such consistency as is implied in this would be as easy to imagine a chance effect as a child's box of letters fallen out

upon the floor arranging themselves into intelligible sentences. Let us see, then, how far the thoughts we have connected with the divisions of the animal kingdom conform to this ideal, and what help they give us toward realizing the animal type as a whole.

Here they are, then. We have, as to the spiritual principles implied,—

1. The Vertebrata: "harmonious obedience."
2. The Articulata: the soldier-"virtue."
3. The Protozoa: "truth to the heavenly calling."
4. The Radiata: "strength in weakness."
5. The Mollusca: "glorying in our hiding-place."

Mr. Swainson would have told us that we have to prove the circularity of this group to prove its naturalness. As far as this is zoological, I think no naturalist would question it;* but it is perfectly in order to demand that this should be shown as to the spiritual grouping as well as the other. Here also there is little difficulty, however,—for those, at least, whose minds are governed by the Word of God.

1. Every thing must begin with the spirit of OBEDIENCE; nor can there be true progress where this is not, in purpose, at least, entire. *Measured* obedience Godward is *not* that: it is the assertion of one's own will where we please. With God, no

*Except it might be the connection between the *Annulata* and the *Protozoa*. But through the *Rotifera* and *Planariæ* this seems to be found with little difficulty. Details and arguments of this kind would hardly suit the popular character of these suggestions.

command is arbitrary; but wisdom, love, and holiness shine in all. Thus there can be no resistance but in pride and unbelief.

2. And this is what characterizes the world of fallen men, in whom opposition to God is, alas! open and organized. Clearly, if in such a world we would obey God, we must expect at once CONFLICT. Thus the apostle enjoins as the first thing, if we have *faith*, that we "add to" it "virtue,"—what in Greece or Rome was called that—the soldier-virtue, courage. After this come knowledge, temperance, patience, godliness, brotherly love; but courage,—decision of heart that presses on through all opposition—this is the prerequisite to all these things.

The conflict is everywhere, and there can be no non-combatants. Neither God nor the world permits neutrality. That which is simply negative, or assumes to be so, is positive enough in evil: to be indifferent to Christ is to be against Him. Thus, that the second thing here is the plain issue of the first, we see at once.

3. But that the third follows the second is not so evident. The connection is that which the apostle gives, that "no man that warreth entangleth himself with the affairs of this life, that he may please Him who hath chosen him to be a soldier." This is the spiral which is traced in the orbit of obedience,—the upward movement of the heart toward Him

who is, though in heaven, the Captain of salvation, and by whom we are called with a HEAVENLY CALLING. If our eyes are there, we shall be free from entanglement with the affairs of this life; temptation will not press upon us; our heads will be covered in the day of battle. Thus the third particular is intimately joined with what goes before, as well as with what follows also.

4. For with all this will go the sense of WEAKNESS, the conscious need of strength not one's own, the craving and the finding it as inward realization, though leaving one still to the conviction that it is not one's own. This is the coral type, which has its manifold and beauteous forms, as has its antitype. Here association has also its recognized place, where those who are agreed are found together, and "God sets the solitary in families." In all these things, how large a field opens up before us! but we cannot enter upon it here. It is very plain how this unites with—

5. *The* GLORIFYING *of Him in whom the soul has found its refuge* and its hiding-place, and that in this way we return to that with which we set out, God's "statutes" being "songs in the house of our pilgrimage." Thus the life—not ends, for it never ends, but—completes its orbit, and returns afresh to begin its course with God in psalm. How beautiful here is the unending circle, the type of eternity!

Can one conceive that all this is mere imagination? Does not its very sweetness speak for its truth?

This circle of animal life, then, how as a whole shall we define it? what is the animal type, as told out in it? We have seen that "the living soul that moveth" is the Scripture definition; we have seen that the number 2, which is that of the kingdom, speaks of service, as it does of conflict and even of destruction, on which account Mr. Swainson makes his subtypical groups, too exclusively by far, the types of evil, while, in truth, the work of Him who is above all the typical Servant is to destroy, but to destroy the works of the devil, and the lion, for example, is one type of Himself. Thus, putting all together, and in connection with what the circle of its primary groups declares, the animal kingdom seems to furnish us with the types of active life of the soul in a scene where service becomes necessarily conflict, and where hate is as necessary in its place as love, and is the fruit of it: "Ye that love the Lord, hate evil" is the motto of it. (Ps. xcvii. 10.)

Only we must remember that, while this is the prevailing and characteristic thought, we shall find that, as the shadow accompanies the sun, so the types of evil *are* to be found in it also, as we have been reminded, and that numerously. For the

world pictures for us the whole strife betwixt good and evil, and only so could it present to us the conflict of good at all.

We must also remember that there are many minor but necessary types that come in to fill out the picture, "aberrant" as well as truly "typical" forms having their necessary place in it, as we have seen. God's thoughts are not narrow, nor possessing the mere symmetry that we would often give them. While our thoughts of order are often like the close-clipped bushes of an antique garden, or the dead level of a Dutch landscape, He delights in the wild luxuriance of the forest, and the bold outlines of the breezy hills.

But it is time to come back to our question, What is the meaning of the vegetable type as a whole, when compared with the animal? And here it is plain at once that the vegetable, whatever else it may be, is *not* the type of external activity. Exceptionally we may find among the animals (in their aberrant forms) a mollusk anchored for life to its dwelling-place, or even the coral-reefs of many generations; but the *law* of the plant is that it is fixed: as another has said, its root is its fetter; although this be a thought which after all has its incongruity also. For the root is hand and mouth to it rather, by which it makes the soil in which it is rooted minister to its sustenance, and turns the

dead inorganic dust into living forms of wondrous beauty and magic power.

Yea, this root is the underground workshop of a life-force which is, as long as it abides, ever pushing out into the earth its mines, and manufacturing its products of many patterns and for many uses, which it perfects then in leaf and flower and fruit in its factories above-ground, where it clothes itself, in the assurance of the dignity of labor, in glorious apparel beyond Solomon's. Here, in this manufacturing power, as we have seen, is the significance of the plant. In the life, which is its characteristic, having no higher qualities of soul as the beast has, it develops a marvelous power such as we never find again, by which it becomes the tender nurse and bounteous provider for all other life. It is the natural vitalizer and regenerator of the dead and lifeless; typically this, and thus filling its place as the *third* kingdom, reflecting in its measure the operation of the third Person of the Godhead.

Its activity is not external, like that of the animal, but *internal*, manifested in growth and production, processes of life alone; which in the animal also are the necessary basis and support of the external activity. The world, like any other building, is not built down from the top, but upward from the bottom,—a fact which has crazed the evolutionists,—and thus that which is higher rests upon what is

lower, and "much more that which is feeble is necessary," as the apostle teaches. Yet *not* in the way of evolution, but as here, where that which is higher is not *produced* by the lower, but *roots itself in it, and transforms it.* Life is never except from life: so, in opposition to theory, the facts teach. Yet the lower is necessary to the higher, but as a basis only: it does not *rise* to the higher level, but *is raised.* And this is the constant law.

The vegetable kingdom, then, does not speak of outward, but of internal activity,—of growth and production,—of root and leaf and flower and fruit. Spiritually, this is easy to interpret. Here, the root is faith,—unseen, hidden, yet active, and the elaborator of all that is developed in the plant. Let us not be stumbled by the fact that the root is not *always* this: we have seen that in natural types the false is shown to us with the true, the evil with the good. There are roots which dangle in the air, flourished before men's eyes, but never reaching the earth at all: so is there a faith which is for show, not use, and useless,—"faith, if it have not work, is dead, being alone." These roots cannot alter the significance of the root, and this faith cannot take from the value of true faith.

The leaf is, as is well known, the lungs of the plant, that in which the root-sap is elaborated by exposure to air and sun. It is that "confession

of the mouth," of which Scripture makes much, in which that which faith has produced comes to light and air, and is ripened and invigorated. The leaf has a beauty of its own, and gives the tree its character before men also. There would be no fruit without leaf: let us not disparage the leaf; though here again there may be the leaf which signifies nothing—*pro*fession, not *con*fession, —a parasite upon the plant instead of something integral. None the less is the leaf as the leaf a beautiful and significant thing.

Then the flower, what shall we say of it? It is, most of all, what they say all is, and with a transcendent spiritual meaning which yet they generally miss, the reproduced sunshine, the face that greets you with welcome, the host with his honey-cup, the smile that anticipates the fruit in store for you. There are deceitful smiles, we know, and poisonous advances, and pleasures that intoxicate: and yet the flower—something spent of God in mere delight for you—may well speak of what is in store against the leaf-fall and the winter, and of the love that planted Eden once, and yet shall make the wilderness to blossom as the rose,—may be witness against mere utilitarianism, or that God has a use for pleasure also, and joys at His right hand for evermore.

Lastly, the fruit: and the fruit is promise fulfilled; something of no utility to the tree, but a draft upon

its resources, a sacrifice that it makes in order to minister to you: all true fruit is not for one's self, but for our Master, and we can easily distinguish between *work* and fruit.

Here, then, are the elements of the plant-life. They show the character we have before ascribed to it: they speak of internal activity, the product and manifestation of the life itself, the sign of that strange regenerative power that belongs to it, and by which alone are sustained the external activities of service and of conflict.

To come, then, to the divisions of the vegetable kingdom: botanists are coming to agree that there are five divisions; three of which, too, are plainly united also among themselves in more than the fact that they are all cryptogamous, or flowerless, plants. The flowering plants have two main types of structure—the dicotyledonous or exogenous, and the monocotyledonous or endogenous plants. We may arrange them thus, then:—

1. Exogens: plants with a central woody axis, two seed-leaves, and the others netted-veined.
2. Endogens: plants with a woody circumference, one seed-leaf, and the rest parallel-veined.
3. Thallogens: growing from a thallus, in which root, stem, and leaves are fused into one general mass.

4. Anogens: stem distinct from leaves, without vessels.

5. Acrogens: stem vascular in part, growing from the top.

Between these divisions and those of the animal kingdom there seems some real analogy, which, in his edition of Agassiz and Gould's "Outlines," Dr. Wright has pointed out. As he makes only three divisions of each, however, I can avail myself only partially of his remarks, especially as he puts the Mollusca, along with the Radiates, into his second division. The analogy, as far as I have been able to trace it, runs thus:—

1. Between the Vertebrata and the Exogens it consists in this, that the latter—

"grow by the addition of concentric layers or rings of wood made to their outer surface," the softer parts being thus outside, the solidity more "internally, like the osseous skeleton of the Vertebrata. The central pith is inclosed in a sheath, analogous to the spinal canal, extending through the entire length of the plant."

While—

2. In the endogenous plants "the marrow or pith is interwoven with their vegetable fibres, as the nervous system is disseminated by ganglia through the bodies of the Invertebrata: there is no osseous skeleton in the one, nor is there any true wood in the other; but in both, the circumference is more solid than the centre. We see among some families of this section, (as the grasses, lilies,

palms, etc., the same as among insects, crustacea, and annelids,) the integument more or less indurated, and in some families containing a quantity of silicious particles. The knotty-jointed stems of many grasses represent the articulated body of worms, crustacea, and myriapods. Many families in this division produce seed only once in their lives, like some worms and insects that cease to exist after having deposited their *ova*. None of these endogenous vegetables grow by layers, but by a swelling out of their internal structure, just as the horny or calcareous envelope of insects and crustacea is periodically shed to allow of a general increase from within."

Thus far I thankfully follow Dr. Wright, and it will be seen that the analogy shown under this second group is all with the Articulata. Although grouping the Mollusca with these, he traces no link of resemblance between the endogens and the former. Indeed, between the two animal groups themselves there is no special resemblance.

3. I go on, therefore, to the Thallogens, where, among the Algæ, there are so many forms that resemble animalcules, that there has been even a difficulty to decide whether they were vegetable or Protozoa.

4. The Mosses are simple-tissued, stemmed, and social, so far like the corals.

5. While the scalariform vessels of the Fern may answer to the development of the circulatory system in the Mollusk, beyond the other aberrant animal

divisions. The fibrous cylinder of the tree-ferns, constituted of the bases of the fallen leaf-stalks, may remind one somewhat of the Mollusk's shell.

Between the types of life so far apart as the animal and vegetable these analogies, though sometimes faint, seem true. I certainly do not think that any thing like them could be shown between the divisions which do *not* correspond in the two lists; and if this be so, it is strong proof that they are real. But let us now look at the divisions of the vegetable kingdom in their inner meaning, and as connected with the numerals severally attached.

I. THE EXOGEN.

EXOGENOUS WOOD.
(A) Sapwood. (B) Heartwood. (C) Bark.

The exogen is distinguished by the woody axis of its stem, its netted leaves, its two cotyledons: we

will begin with that to which it owes its name—the stem. This, of course, is only to be seen in its full meaning in the tree, and all the trees of our temperate and colder climes are exogens.

If we cut across the stem or branch of an exogenous tree, we shall find it composed of three parts essentially. There is, first, a central *pith:* this is the tissue of which the whole plant is at first composed, and from which all other is formed. It is composed of cells, the primary elements of all living things, in which is contained the "protoplasm," the substance in which alone life manifests itself, and of which the simplest living forms, whether plant or animal, seem wholly to consist. Cellular tissue is therefore the *typical life-tissue*, in which the activity characteristic of life manifests itself, the actual workshop in which the inorganic matter received into it *becomes living*, and then takes its place in the organism to fulfill its destined purpose in it.

We do not wonder, then, to find this cellular tissue in the middle of the stem, connected with "rays," —the "medullary rays,"—which proceed from it to the outer portion. As the tree or branch gets older, the life-tissue diminishes and dries up in the heart, and the tree (alas! as we do,) grows old fast in this way. Yet the medullary rays remain, and serve an important purpose, of which we shall presently have to speak.

The pith is surrounded by the *woody layers*, the number and thickness of which increase yearly with the growth of the tree itself. These woody layers constitute, of course, the strength of the tree, by virtue of which it lifts its glorious foliage and its harvest of fruit into the light and air of heaven. In the exogen, these woody layers, the product of transformed living cells, are pressed close to the heart of the tree, as if it knew and clung to its support. Would that we knew as well! But at least we *do* know, for we have seen it already in the Radiate, what this axis of support represents. It is Christ with all that is revealed to us in Him, and as He is received by the soul in living reality, that is the stay and support of it. Well may He be clasped to our hearts, and become the prop upon which our whole life hangs, with all the weight it carries.

Only observe, as you may in the herbaceous stem, how the woody layers form, namely, in *strings:* "each string separated from its neighbors by a prolongation of the pith, which thus maintains its connection with the bark." For the reception of Christ is by the Word,—the "*doctrine* of Christ,"—and this must thus (every *string* or line of truth) be wrapped up—to speak according to the type,—in *living tissue.* Alas! the accumulation of this woody fibre, all-valuable as it is, may choke up these life-channels, through which the sap penetrates through-

out the stem of the tree, and sad injury be done. The medullary rays are to remain: all the truth of God must abide in connection with the life, and the life-pulses, as it were, ramify through it.

But the woody layers must increase: year by year, a ring of wood is added to the central axis, *the tree enlarging to make room for it:* this is the way too for us to acquire truth without being choked up by it—the only way. And the *tree*, at least, never neglects to lay up its store. You may count its years of growth by these annual rings! Thus too with us should the new truth apply itself to, wrap round, and strengthen what we possessed before; and thus that which was first received becomes like the "heart-wood"—stronger and more solid continually.

The *bark* is formed on the outside of the wood, but grows from the *inside out*, the outer layers gradually decaying, and dropping off. With every fresh life-burst in the spring, the bark is loosened from the wood by the newly organizing substance; so that the new wood clothes itself afresh with a coat to suit it. So should it be with our outward life: it should receive its expansion from within, and be always ready to receive expansion and new modeling. These changes are incident to growth, and should not subject us to the charge of fickleness or inconstancy. The expansive power of life is a

mighty energy, and if it can be resisted, yet there is death in the resistance.

The stem as the ascending axis of the plant is fittingly accompanied by that spiral arrangement of the leaves in which we have the type of orbital and upward progress. The leaf itself, it is assured us,* gives the pattern of the whole tree, supposing the branches were brought into one plane, as the veins of the leaf are. If the leaf speak of profession, then we are reminded here of the needful consistency between what we *profess* and what we *are*. In the reticulated veins of Exogens we have an arrangement by which the sap is more completely and persistently exposed to light and air than it is in the parallel veins of the Endogenous leaf. And this corresponds in measure to the more perfect oxygenation of the blood in the Vertebrata than in the other divisions of the animal kingdom.

In that living and internal activity which we have seen the plant typifies,—that in which alone *fruit* is found, the Exogen has clearly the highest place. As already said, all the trees of temperate climes, and the largest number of *all* trees by far, belong to this division. It is the type of endurance, as it is of perpetuity, in its duration of life surpassing all other trees. As taking first rank among vegetables,

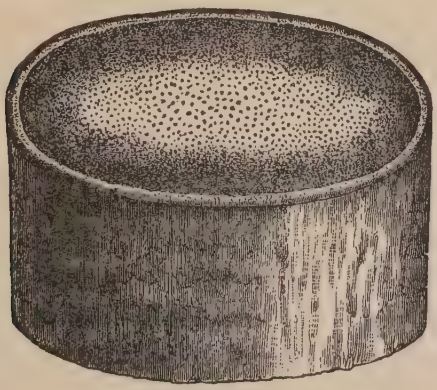
* "Typical Forms and Special Ends in Creation." By Drs. McCosh & Dickie.

its numerical place speaks, as I think, of that harmonious, full-rounded life in which alone is power and perpetuity; and the peculiarity of its growth assuredly should remind us that it is Christ in the heart, Lord and Master there, that communicates this power. For this, doctrine—dogma, if you please,—is absolutely needful: that is, the Word of God received in the love of it. We are sanctified by the truth,—not by what we *think* truth merely, nor by sincerity. We take form by it; we are cast in the mould of the doctrine. That there is danger for us here we have already admitted, but the danger in the present day is comparatively little in the direction of adherence over-much to dogma; it is much more that of careless indifference and unbelief. Let these concentric rings of animal growth in the Exogen be our admonition: for the life of the plant is shown in these new acquirements; here it is that the circulation of the vital sap is mainly carried on, which ceasing, the tree is dead.

2. THE ENDOGEN.

The Endogen has no proper woody axis: it is rather, in idea, a woody cylinder; it is sometimes, as in the grasses, almost a hollow one. Its stem is a walled stem, a fortified inclosure, as if built against assault. In the trailing palms, and in the grasses, the stems are "additionally hardened by a

copious deposition of silex; this is especially the case in the Rattan, which will readily strike fire with steel." In the interior, the cellular tissue is mingled with bundles of woody fibres carrying vessels: there is no proper wood. The palms, indeed, are the only real trees among the endogens; and for value, they are far exceeded by the grasses, which to men and cattle furnish so large a proportion of their food. The biblical notices have to do almost entirely with these two,—the grasses and the palms.



STEM OF A PALM: ENDOGENOUS.

The palm-tree is, in Scripture, the figure of the righteous, taking its name from that uprightness which furnishes so ready a similitude.

"The familiar comparison, 'The righteous shall flourish like the palm-tree,'" says Dr. Howson, "suggests a

world of illustration, whether respect be had to the orderly and regular aspect of the tree, its fruitfulness, the perpetual greenness of its foliage, or the height at which the foliage grows,—as far as possible from earth and as near as possible to heaven. Perhaps no point is more worthy of mention, if we wish to pursue the comparison, than the elasticity of the fibre of the palm, and its determined growth upward, even when loaded with weights."

To which Tristram adds that it flourishes in a barren soil; being characteristic of sandy and semi-tropical deserts, but requires constant moisture, and has died out of much of Palestine from the lack of human care.

The palms in the hands of those come out of great tribulation, therefore, in the book of Revelation, may well speak, not only of the desert out of which they have come, but no less of the divine love which had there tended and nurtured them; for thus all human righteousness is dependent upon the grace of God and the "living water" of the Spirit of God.

At the other extreme from the stately palm, the grasses render to man incomparable service.

"When it is considered," says Dr. Carpenter, "that all the wheat, barley, oats, rye, and other corn-grains used as food by man,—as also rice and maize, or Indian corn, which support an even larger number than the former,—the sugar, which is now become, not only an article of luxury to him, but of necessity,—and the various grasses,

which form the staple food of nearly all the animals, upon which he relies for the supply of his appetite, and for assistance in his labors,—it will be at once seen that no single tribe can be compared with the Gramineæ in importance to him. We have had to notice other tribes, and even particular species, which are of the most important benefit in certain situations; such are the date and the cocoa-nut. But these are valuable just because the grasses, which are otherwise universal in their distribution, are prevented, by peculiarities of climate, or other causes, from flourishing in those particular spots. In all but the very coldest parts of Europe we find some of the corn-grains affording the principal supplies of food;—barley and oats in the north, rye in latitudes a little more southern, and then wheat. In the southern parts of Europe, rice and maize come into ordinary cultivation; and the use of these extends throughout the tropics.

"The various provisions for the natural propagation of these important vegetables are extremely interesting. The animals which browse upon them usually prefer the foliage, leaving the flowerstalks to ripen their seed; or, if they destroy both, the plant spreads by offsets from the underground stems. Even if they be trodden down, they are not destroyed; for buds are developed from the several nodes of the stem, which thus multiply the plant. It is on exposed downs and barren places, where the heat is insufficient to ripen the seeds, and where there is no germination, that we find the tendency to multiply by buds most remarkable."

Not only do the grasses minister thus directly to man, but they even preserve for him the fertility of

the ground, and the ground itself. The Sand-Reed and other species—

"Can vegetate amidst dry and drifting sand, and are hence employed to give firmness to embankments, which they pierce with an entangled web of living structure, that offers a resistance rarely overcome by the force of storms, and is renewed as fast as it is destroyed. Cattle will not eat them, and hence they are providentially adapted to escape that mode of destruction; but when they have been uprooted by the thoughtlessness or ignorance of man, the most serious evils have arisen. In Scotland, for example, large tracts of once fertile country have been rendered barren by the encroachment of sand hills, which have given them the desertlike aspect of Egyptian plains; and this encroachment has resulted from the wanton destruction of the mat-grasses."

Thus service has here also to take the form of conflict, and the service of the grass is largely of this character.

"Indeed," says Macmillan, "the great primary object which God intended to serve by the universal diffusion of the grass, seems to be the protection of the soil. Were the soil freely exposed to heaven without any organic covering, it would speedily pass away from the rocks on whose surface it was deposited. The floods would lay bare one district, and encumber another with the accumulated heaps. The sun would dry it up, and deprive it of all its nourishing constituents; the winds would scatter it far and near, and fill the whole atmosphere with its blinding, choking clouds. It is impossible to imagine all the disastrous effects that would be produced over the

whole earth, were the disintergration of the elements not counteracted by the conservative force of vital growth, and the destructive powers of nature not kept in check by the apparently insignificant, but actually irresistible emerald sceptre of the grass. The earth would soon be deprived of its vegetation and inhabitants, and become one vast desert catacomb, a gigantic lifeless cinder, revolving without aim or object round the sun."

For its place in this conflict it is marvelously adapted.

"The root, in proportion to its size, is more fibrous and tenacious than that of any other plant. In some instances it is so vital that, like Hercules hydra, the more it is hacked and cut, the faster it spreads itself; and it runs so extensively, each joint sending up a new shoot, that it encloses a considerable space of soil. . . . The stem, or culm, is hollow, provided at intervals with knots, and invested, as if by some mysterious process of electrotype, with a thin coating of flint. It is constructed in this manner so as to combine the utmost strength with its light and elegant form; and so efficient are these mechanical appliances, that it rarely gives way under the force of the most violent winds."

The endogenous growth in such opposite developments, then, as the grasses and the palms, gives a true indication of the thought which is embodied in this division of the vegetable kingdom; and the grasses refer us to the Articulata in more than their jointed stems. But while nutritive products abound among the endogens, there are few that are

injurious: the "types of evil" of which Mr. Swainson speaks, are found but seldom throughout this class. They are largely the benefactors and ministers to the need of man; uniting with this the thought of separation from surrounding influences. The walled stem is, as it were, a "garden inclosed." The *love*, as well as the "*fear* of the Lord, is to depart from evil.

As a second division, and in this way corresponding with the animal kingdom, it is natural that it should approach this in its spiritual idea. But the endogen is still vegetable, not animal, life not soul, and its very fruits and stored up nutriment are indicative of this. They are the result of growth, and internal: they are as fruits of love enriching the heart, but which of course necessarily *imply* the ministry of love which will be the issue.

3. THE THALLOGEN.

Although the lowest form in the vegetable world, the thallogens nevertheless find, through the Duckweed and the Grasswrack of the last division, their connection with it. These two orders, says Carpenter,—

"Both consisting of aquatic plants, may be considered as presenting a near approach to the aquatic Cryptogamia in general structure; and some species are very like Algæ in external aspect. They are clearly separated from them,

however, by their organs of fructification; but these seem reduced to almost their simplest possible form."

Thallogens are flowerless plants, composed of cellular tissue without vessels, and in which root, stem, and leaves are fused in one general mass, which is the *thallus*. While on the one hand we must consider them the lowliest form of life, there are on the other hand none in which the power of life is more manifest and more pervasive. In the stately tree a large part is considered to be dead, as no longer active, however much it may have its use and its necessity in relation to the welfare of the whole. But in the algæ, the lichen, and the fungi, —the three orders into which the thallogens are divided,—there is no part dead. An intensity of life characterizes them, and almost every function of life—in the lowest forms absolutely so—is performed by every part. They are all root, all leaf, and often with various modes of propagation, they diffuse everywhere their microscopic spores, to find wherever they may a place favorable to development. They fill the water and the air; they germinate on barren rock, amid snow and ice, on the bark of trees, on decaying or living organisms, and their tremendous power in the production of epidemic and other diseases has only of late begun to be appreciated. Like the eyes of the Lord, which are in every place beholding the evil and the good,

they are His ministers and messengers for wrath or mercy.

Some, as the lichens, with slow growth, seem types of endurance and longsuffering, resisting cold and heat, and the fury of the storm, and able—

"When scorched by the summer sunshine, deprived of all their juices, and reduced to shapeless, hueless masses, which crumble into powder under the slightest touch of the hand or the foot—to revive again when exposed to the genial influences of the rain, assume their fairest forms and develop their organs of fructification for the dispersion of their kind."

On the other hand, some, like the final outbreak of long-slumbering judgment, burst out in a night, spotting the face of nature with an eruptive growth, from which some malignant formations are called "fungous." Yet these also, as judgment passes in the divine compassion from the penitent, pass quickly away as they arise. They are the signs of existing corruption, as an ordinance of God for its removal, and the work being done, they pass away.

Looking at these plants as in the *third* rank of vegetable existence there seems in them as a whole the assurance of the life they represent as having in it the pledge and power of *resurrection.* The lichen is above all that in which the generative power which characterizes the plant is found. It is the first growth which, diminutive as it may be, "plows upon the rock," where no plow of man will venture,

and prepares the way for future harvests. The Fungi more plainly still speak of resurrection, springing as they do out of decay and death; though we must unite to this the permanence of the lichen, to find the tyye filled out. Each type, in Scripture as in Nature, emphasizes its special point.

Our life as children of God is indeed a resurrection, and if this be the point emphasized here, we need not wonder if there be mystery accompanying it, though this, rather than discouraging, should awaken interest. Here we touch some of the deepest problems of divine work in the soul; and the humble forms before us, while in their lowliness they remind us of what our own origin is, indicate power and forces which are in themselves inscrutable. We see them in their operations only, and indeed as "through a glass, darkly."

It may be thought that, as to the fungus, the type of resurrection is incongruous with that character of it, as representing judgment, which had been before referred to, and which seems in many cases to be less a figure than a fact. Smut, ergot, bunt, mould, in all their varied forms, are surely this; and it would be useless to dispute it. The reconciling truth, however, may be found in different ways. First in this, that even the new life given to us when born again is in itself a judgment upon the old; and it begins in us with the apprehension of

such judgment. And note here that in fact in the fungi, (and strangely enough in forms as low as these,) some tokens of a higher life appear.

"In many of their properties," says one of the most appreciative observers of nature, "the fungi are closely allied to some members of the animal kingdom. They resemble the flesh in animals in containing a large proportion of albumenous proximate principles; and they are almost the only plants that contain azote or nitrogen, formerly regarded as one of the principal marks of distinction between plants and animals. This element reveals itself by the strong cadaverous smell, which most of them give out in decaying, and also by the savory meatlike taste which others of them afford. Unlike other vegetables, they possess the remarkable property of exhaling hydrogen gas; and the great majority of species, like animals, absorb oxygen from the atmosphere."

He goes on to speak of the luminosity of some of them as another link, and adds,—

"It may be remarked in connection with this luminous property, that many fungi are capable of generating considerable heat. Dutrochet ascertained that the highest temperature produced by any plant, with the exception of the curious cuckoo-pint of our woods, was generated by a species of toad-stool called *Boletus æneus.* Such being the curious properties exhibited by these plants it is not surprising that at one period they should have been suspected to be animal productions, formed by insects for their habitations, somewhat like the coral structures of zoophytes and sponges. Though this view has long been felt to be utterly untenable, inasmuch as they have the

growth and texture of plants, and it is well ascertained that they produce, and are produced from seeds like other plants, yet they are evidently one of the links in the chain of nature which unite the vegetable to the animal kingdom and show how arbitrary and unfounded were the old definitions which served to distinguish them from each other."

This would surely strongly confirm the view that the fungi really stand as types of resurrection, an ascent as this is to a higher life. But this is not all that is to be said in answer to the question asked as to how they can be types of judgment also. The answer is that here as elsewhere we have many forms, and types of many things, evil as well as good; and that there is a resurrection of judgment as well as a resurrection of life. All kinds of resurrection possibly have here their representatives, as well as connected truths of many sorts. It is enough for us now to be able to find what seems the leading thought, already expressed by one whom we have often quoted, "fungi the resurrection of plant-death."

4. THE ANOGEN.

We pass now to the mosses. That they fill a gap between the lichens and the ferns needs no insisting on: it is the place they fill for every botanist. They can be described, however, rather negatively than positively. They are composed of cellular tissue

without either vessels or woody fibre, although roots and stem and leaves appear again in them; humble plants, of small size, often minute. Their spores are carried in seed-vessels whose mouths are fringed with a single or double row of teeth, the "teeth being ranged in each row in the geometrical progression of 4, 8, 16, 32, or 64, there never being by any chance an odd number." Thus, in a singular manner, the number of its place in the vegetable circle is impressed on the Anogen.

The meanings of this number are so few, however, and the characters of the moss apparently so negative, that it would seem difficult to trace any correspondence. The number 4 is that which speaks of weakness and passiveness, as we have seen in the Radiates and in the mineral kingdom. "Capacity for division"—4 being the first number susceptible of this—suits also these. It is the earth-number also, and in this respect again agrees with them. What will it yield as to the moss?

Here is one character in which they are assimilated to the Radiates:—

"Mosses possess in a high degree the power of reproducing such parts of their tissue as have been injured or removed. They may be trodden underfoot; they may be torn up by the plow or the harrow; they may be cropped down to the earth, when mixed with grass, by graminivorous animals; they may be injured in a hundred other ways; but in a marvelously short space of time they

spring up as verdant in their appearance, and as perfect in their form, as though they had never been disturbed. The necessity of such a power of regeneration as this is abundantly manifest, when we consider the numberless casualties to which they are exposed in the bare, shelterless positions which they occupy."

Again,—

"Mosses were fancifully termed by Lumœus *servi*—servants, or workmen; for they seem to labor to produce vegetation in newly formed countries, where soil can scarcely yet be said to be. This is not their only use, however. They fill up and consolidate bogs, and form rich vegetable mold for the growth of larger plants, which they also protect from cold during the winter. They likewise clothe the sides of lofty hills and mountain-ranges, and powerfully attract and condense the watery vapors floating in the atmosphere, and thus become the living fountains of many streams."

Lichens are similarly credited with the power to produce soil on barren spots: it is, however, by a different method:—

"The mode in which they prepare the sterile rock for the reception of plants that require a higher kind of nourishment is most remarkable. They may be said to dig for themselves graves for the reception of their remains, when death and decay would otherwise speedily dissipate them. For whilst living, these lichens form a considerable quantity of oxalic acid (which is a peculiar compound of carbon and oxygen, two ingredients supplied by the atmosphere); and this acts chemically upon the rock, (especially if of limestone,) forming a hollow which retains the

particles of the structure, when their term of connected existence has expired. The moisture which is caught in these hollows finds its way into the cracks and crevices of the rocks, and, when frozen, rends them into minute fragments by its expansion, and thus adds more and more to the forming soil."

The moss does not produce soil by such action upon the rock, and on the other hand is a manufacturer of it on a larger scale, gathering from the air the materials of its growth, and then giving them to the formation of soil while it grows on. Says Ruskin,—

"That blackness at the root—though only so notable in this wood-moss and collateral species, is indeed a general character of the mosses, with rare exceptions. It is their funeral blackness;—that, I perceive, is the way the moss-leaves die. They do not fall—they do not visibly decay; but they decay *in*visibly, in continual secession, beneath the ascending crest. They rise to form that crest, all green and bright, and take the light and air from those out of which they grew; and those, their ancestors, darken and die slowly, and at last become a mass of moldering ground. In fact, as I perceive farther, *their final duty is to die*. The main work of other leaves is in their life,—but these have to form the earth out of which all other leaves are to grow."

He adds, in a note written at an after-time,—

"Bringing home here, evening after evening, heaps of all kinds of mosses from the hills among which the Archbishop Ruggieri was hunting the wolf and her whelps in

Ugolino's dream, I am more and more struck, every day, with their special function as earth-gatherers, and with the enormous importance to their own brightness, and to our service, of that dark and degraded state of the inferior leaves. And it fastens itself in my mind mainly, as their distinctive character, that, as the leaves of a tree become wood, so the leaves of a moss become earth, while yet a normal part of the plant. Here is a cake in my hand weighing half a pound, bright green on the surface with minute crisp leaves; but an inch thick beneath, in what looks at first like clay, but is indeed knitted fibre of exhausted moss."

Here, then, comes the meaning for it, quite in accordance with its place in the vegetable series: exhaustion and decay doing God's work in renewal, as spiritually is indeed the case. "Man's day" has to close in ruin, and give place to that "day of the Lord" which is "upon every one that is proud and lofty, and upon every one that is lifted up, and he shall be brought low," that the Lord alone may be exalted in that day.

Even failure and evil, under God's hand, thus work often with us that humiliation in which is the secret of future blessing. Out of defeat comes victory; out of the experience of weakness, strength: the discipline of the wilderness is the training for the battles by which in the end the land of the inheritance is to be possessed. Nothing could be a more needful lesson than that which here is taught

us by the lowly moss—dying to take possession of the earth.

But there is another property of the moss, upon which largely depends its ability to fill the place for which it is destined. It is its already mentioned *affinity for water*. "Every part of them, and especially the leaves, is endowed to a remarkable degree with the power of imbibing the faintest moisture from the air," and thus clothing the sides of lofty hils and mountain-ranges, they "powerfully attract and condense the watery vapors floating in the atmosphere, and become the living fountains of many streams."

How wonderful a property is this of a lowly plant! and spiritually, the thought is quite easy to be read. It is the humble to whom God looks; the proud He knoweth but afar off. It is our emptiness, when apprehended in the soul, which makes us fit vessels for the Spirit of God to dwell in.—fit channels by which His fullness can be poured out for the refreshment of others. This is a simple thought, and as sweet as simple, while assuredly we need to be reminded of it. The insignificant moss may help to impress upon us what is of inestimable value for our souls.

We shall have yet to see this in its place when we review presently this circle of nature-teachings.

One group only now remains to be considered,—that of the ferns, or—

5. ACROGENS.

STEM OF TREE-FERN. ACROGENOUS.

With the ferns are grouped also the club-mosses and the horse-tails, the former of which "are usually found in bleak, bare, exposed situations in all parts of the world, and sometimes attain a large size, forsaking the creeping habit peculiar to the family, and becoming arborescent in tropical countries, particularly New Zealand, rivaling in rank luxuriance the surrounding trees and shrubs of the forest. . . . Lycopods may be said to present the highest type of cryptogamic vegetation, the highest limit capable of being reached by flowerless plants. Indeed, they are said, by botanists of the highest reputation, to bear a close affinity to coniferous trees,—to be, in fact, pine-trees in miniature."

The Acrogens, therefore, lead us back toward the Exogens, and the circle here too is complete.

Is it complete from the other side—the spiritual one? This has been the case so often, that, even before knowing, one cannot but have a peaceful, happy confidence that so it must be here; but I did not *know*, until I just now came to ask myself the question, that so indeed it is. We have traveled round in the vegetable circle, just as we did in the animal, until we have got to the fifth place, just opposite the mollusk: what link can there be between a fern and a mollusk? True, there was some kind of analogy attempted to be traced between them awhile ago, but it seemed after all a faint one, especially the comparison of the mollusk's shell with the cylinder of the tree-fern. Now, as we look at this last vegetable form, what impresses one is, how thoroughly *the leaf appears to be the whole thing*. The scars of the fallen

FROND OF A FERN.
Showing the seed (or spore) in the leaf.

leaves mark the stem outside in the whole length of it; the living leaves are thrown out at the top, but they, with the ducts and vessels which rise up into them, and the base of the old leaf-stalks, form the solid part of the trunk; the centre, which is of cellular tissue, often is deficient, so that the cylinder is hollow; then the spores, which answer to the seeds in higher plants, are on the under side of the leaves: so that the whole growth of the plant seems to be, as it were, leaf. Just as the mollusk seems to exist but for its shell, so does the fern throw all its vigor and energy into that which is its crown of glory upon its summit, its crest of leaves.

But what is the leaf? Here what it is elsewhere, of course; if we are to interpret it spiritually, as our rule is. And thus, if the leaf be the glory of the fern, it glorifies, as the mollusk does, its *confession:* and this, for us, if we are His, is Christ. So that the mollusk and the fern are really akin, more nearly than at first we could have believed. There is a spiritual relationship which goes beyond, while it enforces the natural. And the fern fills thus the fifth place, as the mollusk does. It is the rounding off of the life with God, that God is confessed with the tongue, as glorified in the ways. And thus the circle is closed, and we are brought back to the beginning again. In the Exogen, it is Christ held in the heart; in the Acrogen, Christ confessed with

the lips; and if He be confessed because dear, yet He will be *more* dear for the confession. Yea, "if ye be reproached for the name of Christ, happy are ye; for the Spirit of glory and of God resteth upon you."

Notice here, that in the fern, there is no flower, no fruit: *the seed is in the leaf itself.* And how fruitful is this confession of Christ, when it comes in its place in the filled out circle,—when it is itself *fruit*, as we may say, the fern-leaf is. What better fruit is there than this, when the testimony to Christ comes out of a heart filled with, and a life given to, Him!

Here, then, we close our glance—mere glance it is—at the Vegetable Kingdom. We began with—

1. Christ dwelling in the heart by faith, known by the Word of truth, growingly more and more known, the stay and support of the soul, which develops into power and individuality as it is built up on Him. Nothing is more *individual* than the exogenous tree, strictly as it adheres to the divine plan for it.

2. Then we had the fruitful life, separate from the world, armed against evil, elastic under pressure, —the result of the former. This is the walled and fruitful Endogen.

3. Then we go deeper, to see this life as a life in resurrection, a life which thus has power over death,

though it implies the judgment of the old man, and the old things passed away. This is the Thallogen.

4. Then in the lowly moss, we learn the weakness which is strength, a humiliation which implies exaltation, a discipline which is a Father's hand, and how our need and nothingness attract the dew and ministry of the Spirit.

5. And lastly, what this leads us to is joy in Christ, and the confession of His name. Who else is worthy? what remains to us as the necessary consequence, but that "Christ is all"?

And now I have but to close this fragmentary sketch with the expression of the hope, that, poor as it is, it will yet help some to a new reading of the facts of nature,—be even in some measure a key to the language of what the finger of God has written for our learning; that He Himself may be better known and nearer, nature witnessing of Him as Scripture does, and one with Scripture in its witness,—Christ the theme of both.

"And every creature which is in heaven, and on the earth, and under the earth, and such as are in the sea, even all that are in them, heard I saying, 'Blessing, and glory, and honor, and power be unto Him that sitteth upon the throne, and unto the Lamb forever and ever.'"

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